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Revised January 13th 2001 for PCB Rev E

Specifications

Zones

- 8 fully programmable zones on Control Panel, expandable to 16 or 24 with Local Expansion Module (LEM) and 64 with Remote Expansion Module (SEP02)
- Each zone configurable for 0 or 2 end-of-line resistors
- Up to 32 predefined Zone types to simplify zone configuration
- Surge/Over voltage protection for each zone

Power Supply

- 16.5 V 40VA Class II
- Minimum Standby Battery requirement: 12V, 7 AH sealed lead-acid battery for 4 hour standby. (UL985: One 7 AH battery for 24 hour standby with 200 mA auxiliary current, or two 7AH batteries for 24 hour standby with 400 mA auxiliary current). Reverse protection for battery.
- 1.5 A regulated DC supply with Resettable Fuse protection
- Supervised for Mains failure and low battery
- CPU Dimensions: h= 350 mm, w= 362 mm, d= 90 mm, weight 5 kg boxed.

Auxiliary Supply Outputs

- 12V unswitched supply
- 12V switched supply (automatically reset when disarmed)
- Note: Both switched and unswitched auxiliary supplies and 8 Outputs have a combined continuous current limit of 1A. (500 mA for UL applications)

Alarm Outputs

- Speaker Drive with 20 siren patterns
- Siren Output with programmable siren pulse patterns
- Strobe output (12v)
- Combined Alarm Output current of 1.5 A max (with battery)

System Supervision

- Low Battery
- Mains failure
- Telephone Line cut
- Individual Zone tamper (open-circuit or short-wiring) with 2 end of line resistors
- Dedicated 24 hour Tamper input (used for cabinet and siren tamper)

Memory

- Non-volatile memory maintains configuration during total removal of power
- Event log with 250 events which can be accessed remotely or locally.

Alarm Types

- 32 programmable alarm types including user-definable alarm types
- Predefined alarm types include Intruder, Fire, Panic, Duress, Arm , Disarm etc. Each alarm type selects a siren pattern, telephone combination, can trigger a user-defined response, which turns on/off appliances, lights etc.. Each alarm type can be set to report to any combination of the telephone numbers

Dialler / Digital Communicator

- 8 programmable telephone numbers. Each alarm type activation can be programmed to dial to any combination of telephone numbers.
- Each number can be assigned to Central station, voice phone, personal pager, or recorded voice message.
- Pager automatically displays system ID, alarm type and Zone or User number (depending on the alarm type)
- 2 Central Monitoring station numbers with individual account numbers.
- Digital communicator formats supported include all major pulse formats (3x1, 4x1, 3x2, 4x2 at 10 pps, 20 pps and 40 pps), Contact ID, Surgard. (This product has been tested by Underwriters Laboratories with the Radionics Model 6400 receiver using 3-1 40 pps and 4-2, 40 pps formats).

Home Automation Outputs

- 8 open collector outputs on main board, expandable to 16 with Expansion module.
- Each output can drive external relay or infrared LED for remote control appliances. Relay Modules with 4 relays are available.
- Selectable Pulsed or Steady output activation.
- 32 (FS18) or 25 (FS17) selectable infrared codes (air conditioners, home entertainment) for any output.
- Built-in X10 interface to PSC04 (110V 1 way) /PSC05/ TW523 (110V 2 way)TW7223 (230V 2 way) module. (This feature has not been tested by Underwriters Laboratories)
- Over voltage and Surge-protected outputs.

Keypad / Door Station

- Up to 4 Keypads / Door Stations per system (8 with auxiliary power supply)
- Keypad/Door Station current consumption : 15 mA (idle), 120 mA with siren
- Indicator LEDs: Home/Trouble, Armed/Alarm, Power Failure/Low Battery, New Message, Microphone on.
- Voice and siren sounds
- Built-in microphone for recording, intercom and alarm verification

- Tamper switch (24 hour)
- Loss of Communications Trouble alarm
- Back-lit keys
- Dimensions: h=158 mm, w= 90 mm, d= 35 mm, weight 300g boxed

Telephone Answering machine

- Digital Answering machine with 10 minutes of recorded messages
- 8 programmable mailboxes with individual sign-in codes.
- Recorded messages with individual time/date stamps.
- Answering machine is accessible from any phone in the house.
- Call screening option on Keypad
- Recordable greeting message and user names for each mailbox.
- Messages are automatically played back when the mailbox user signs in, or may be accessed from any telephone. New messages can be forwarded to a phone or pager for each mailbox.
- Automatically erases the oldest saved message when a new message is recorded and recording memory is full.

False Alarm Filtering Features

- 2 way voice on Keypad
- Voice Alarm History with Date and Time of zone activation.
- Voice Alarm Tracking in real time of activated zones
- Alert zone types require activation of another zone to trigger a confirmed alarm
- Local alarm warning option for delay entry time-out prior to full alarm.
- Open- or short-circuit zone condition can be signalled as a trouble condition (when 2 end-of-line resistors are used)
- Night Mode Delay zone setting.
- Double sign-in of duress code required to generate duress alarm.

Sign-in Codes

- 16 user codes with individual authorisation for arm and disarm, local and remote access, and disarm after alarm. First 8 user codes for mailboxes
- Engineer code for system and security settings.

Emergency Menu

- Quick activation of Fire and Panic using telephone or Keypad

Test Features

- Battery Test - Immediate or at programmed intervals
- Security Check (walk test) zone activation is announced on Keypad
- Dial test - dials to all programmed telephone numbers, pagers, Central Stations, audible on Keypad
- Siren Test - Momentary activation
- Strobe Test. - turns on and off the strobe.
- Engineer Test Mode - allows engineer to work on the system without causing alarms.

Event Log

- 250 (REV E)
- Full voice log, with date/time stamp and voice description of events
- Local or remote access.
- Select 1st event, last event, previous event , next event , next day, previous day for quick navigation.
- Uploadable to PC using CS-Xpress for Windows 95/98/NT/W2000, may be printed or saved

Other Features

- Report disarm by children returning home (Home-Safe Response)
- Door Station intercom with home or remote phones (requires Door Station)
- 8 Voice Reminder Messages capable of dialout to pager and telephone.
- Family Care Alarm to monitor inactivity.
- 16 Time Programs
- 8 Holiday programs

Ordering Information - Products and Accessories

- Comfort 8001/E (Europe): 8001/US (USA) Central Processor within steel enclosure, Accessory pack and User Manuals, fully tamper protected, without Battery.
- Accessory Pack AP01: Contains 8 x 4700 ohms, 8 x 2700 ohm EOL Resistors, 8 x shunts (for Zone Headers JZ1 to JZ8), 10 x 3-way Terminal Blocks (JP3-7, JP10-14), 2 x 2-way Terminal Blocks (JP8,9) Battery Cable with battery lugs,
- EN02 - Enclosure for 2 x 7AH batteries (for UL985)
- HN02 - Battery Harness 2 ft (for UL985)
- MN01 - User Manual
- MN02- Installation Manual
- MN03 - Applications Manual
- TR1640 - UL-listedTransformer (16.5V, 40VA) manufactured by Macon, Type ATW-1640 for US market, Transformer is within CPU for Europe.

- BT1270 - Battery 12V 7AH (Sealed Lead-Acid)
- TB02 - 2 way Terminal Blocks
- TB03 - 3 way Terminal Blocks
- Model LEM01 - Local Expansion Module 8+8 (8 zones, 8 outputs)
- EOL4.7K - 4.7K End-Of-Line insulated resistors
- EOL2.7K - 2.7K End-Of-Line insulated Resistors

Items below have not been evaluated by Underwriters Laboratories:

- KP01 - Keypad
- KP02 - Keypad with Infrared Receiver (Comfort specific codes only)
- DP01 - Polycarbonate Door Station
- DP02 - Metal Door Station, flush mount or surface mount options
- DM01 - Comfort Demonstration Briefcase
- Model LEM02 - Local Expansion Module 8+0 (8 zones, 0 outputs)
- Model LEM03 - Local Expansion Module 16+0 (16 zones, 0 outputs)
- Infrared LEDs Kit (Infrared LED + 100 ohms 1W resistor)
- 12 V lamps
- Model RLY01 Relay Module (4 relays)
- Model CSM01 Current Sensor Module
- Model LSM01 Light Sensor Module
- Model ZTS01 Zone Test Switch
- Model UCM01 RS232 Interface Module for PC communication
- Model RGR01 Ringer Module
- Model SEP02 Slave Expansion Panel
- CS-Xpress for Windows 95/98/NT/W2000

Year 2000 Compliance Statement

Comfort is Year 2000 (Y2K) compliant, and has been so since the product was first introduced. The system works correctly for all dates up to 9999.

What do I read first?

We have found that placing all the information in one book makes it too thick and means that you end up with three thumbs in various sections of the book at once, so we felt it was easier if the relevant information was spread across a few booklets for better organisation.

Manuals for Installers

Comfort Installation Manual

This manual describes the installation methods along with some basic grounding on the Comfort Concept, also lists the voice menu options

which are found after entering the Engineer Code and shows the Flowchart for overall view

Keypad/ Door Station Installation Manual

This leaflet show how to connect and install the Keypad and Door Stations to the Comfort control panel. The information is also found in this manual.

Programming Worksheet

The worksheets are the place where you write down your customer configuration and programming settings. We strongly recommend that you do not attempt to install a system without using this worksheet as it will make your programming much easier, and prevent you from missing any settings. A detailed record of how each system is configured is crucial for proper management. Also, keep it updated as any future changes take place. If used properly it may save your life , more than once.

Programming With Action Codes.

You can get the system up and running on the default settings, but its likely you will want to do some of the clever things which attracted you to Comfort in the first place. You will need a good grasp of Action Codes and how they are used in Response.

Action codes are Comfort s powerful customisation commands. These are assembled into Responses (sometimes called Macros) to produce multiple operations. They can be found in Table 33. Master these and you can make your Comfort system do what no other system can. If overwriting an existing Response, always check first that the Response is not already being used by the system.

Defaults Manual

We try to provide a useful starting point for your Comfort Configuration, this is called the default.cst file and is detailed in the Default Manual Guide.

Applications Manual

The applications manual is a more in-depth guide to using action codes and responses for use in customising a system. Many of the applications are not found in the default setup and must be entered into the responses menu using the manual method via Engineer Menu 3,6 or using CS-Xpress. This is updated constantly as new applications and solutions are written. The Applications manual is is available On-line at: www.comfort.org.uk/technical (password protected). You can apply for a password at this address: www.comfort.org.uk/index4.html.

Manuals for Users

Quick Start Guide

This guides the user on how to operate Comfort using the Keypad and its function keys. very often this is the only thing the user needs to read.

Users Reference Manual

This is a detailed users guide for those who want to make full use of Comfort s unique capabilities.

Design Considerations and Applications

Default Configuration and Responses

The default settings (default.CST) have been constructed to give a good starting point for your security and automation system.

The default responses provide a broad selection of functions, they may be viewed in table 33 of the Programming Worksheet. X10 commands have been included. To make best use of these settings it is recommended that Housecodes A are used for downstairs lights and Housecodes B are used for upstairs lights. L has been used for outside lights and H has been set for heating. This segregation helps to achieve functions such as flashing all the lights in an alarm condition or to switch downstairs lights off when Night Mode is selected. Additionally, macros have been allocated within the default response to simplify the process of linking many responses together when for eg. Security Mode is required to cause more than one action such as switch a light on, draw curtains and switch non-essential sockets back on. Default also makes use of a light sensor on Zone 13 for lighting sequences. Other macros have been assigned for certain Alarm Types, Security Modes and the Doorbell action. There are also some default Home Control functions such as Menu 6 (Alert Menu) which allows the user to disable the chime and voice announcement from being triggered by certain programmed zones.

Run Additional Cables

If you think you may require 6-core cable to a part of a building, run a 12-core instead, you never know what may be needed in the future! If possible, (although not a requirement) use screened cables for trouble-free installations

Current Consumption

It is very easy to underestimate the load which can be placed on a system unintentionally. Before starting to run cables, find-out the current draw from all the devices to be attached to the system FIRST. It may be that supplementary power supplies will be needed sooner than you think. If the standby current is over 850 mA install a Power Supply Unit (PSU).

Think future retrofit

Comfort is one of the most expandable systems around! Installers can benefit from ongoing upgrades and modifications as there is so much add-on potential . Selling to an existing customer is always easier than finding new customers. A customer may wish to connect to a Central Station or add security lighting. They may require home control using X-10 or operate the curtains, or they may just want more detection points, a camera or Keypad, additional intercoms or even flood detection! A little forethought during the initial installation can make upgrading a system in the future so much easier. Future proof every installation for Comfort!

Always allow for extra capacity in the cables. If more zones or outputs are required, run extra cables to the other end of the building so you can install Keypads. Customers may have already shown an interest in these things and plan to add them at a later date. If you are already taking cables in a certain direction, increase the capacity. You may need to estimate what a customer might need in the future. Some companies prefer to install Comfort as a 'basic system' and take a planned approach to their marketing by sending special offers throughout the year to stimulate the interest in time for their annual inspection and do the update at the same time.

Detectors

Aim to use 2 End of Line resistors for added security. You only need a pair of conductors per zone to give both zone information and tamper protection. The resistors should be fitted into the detector.

X-10 in New House Builds

The ideal time to integrate true Home Control functionality is during the planning and design stages of new properties. This way, the cabling between wall switches and lamp fittings can be configured to use AD10 (Socket and appliance control) or LD11, LW10U (lighting control) DIN rail modules sited in a separate container near to the Main Comfort Panel and possibly the fuse board. This is where they work most effectively. Bring the wall-switch cables AND light fitting cables back to the X10 consumer unit, rather than the usual convention of running wall-switch cables to the light fitting and the light fitting to the mains supply. This gives maximum flexibility, you can still use the wall switch or Comfort to control the light. This is because the wall switch is actually switching the LD10 module which in turn switches the mains onto the bulb. This is the best way to use LD11.

An alternative wall switch LW10U which contains the X-10 receiver module is also available. This switch is used instead of the LD11 and can replace the normal wall switch by working through the live cable feed. Be careful, certain loads such as fluorescent lamps (PL type) may not work with this switch because they cannot provide a neutral return path through the lamp. Always advise customers of this so that the correct bulbs are used in the future.

Distance and noisy mains supplies can seriously impact the quality of X-10 signals around a house. Test the house first, using the UR24 and

Radio Transceiver Module TM12U. These two devices can also be used to provide a wireless interface to perform any of Comfort's Responses. See 'X-10 received codes' in Table 32. *Offices can be particularly bad for noisy mains supplies and in many instances will prevent X10 signalling from being viable.*

X-10 address can be categorised by their applications. You may need to switch OFF all of one particular address at once. You could use X-10 'G' address' as general switching, 'L' for external lights, 'H' for Heater (i.e. Central Heating) etc. Never use X-10 to control appliances which could create a hazardous situation if suddenly switched ON or left ON for long periods of time. Note: There is not an All units On command for safety reasons but there is an All lights On . If you do need to switch more than one Appliance Module On, use the 74 action code (Do response) between each required response to save on response lines.

Lighting Control Linked to Security

When someone enters the property through the front door when the system is armed, the hall or front lights can be switched on if the light level, (as determined by a photocell) is low (Response 231).

If an Intruder Alarm occurs, the lighting in the violated area may be turned on so the owner can quickly identify the area of possible intrusion, alternatively you may wish to flash all the lights in the property on and off (Response 49 - A&B). If a fire is detected, all the lights (Response 191 - A&B) or just the lights in the exit routes can be turned ON (Response 33 - A1).

To provide additional deterrent effect, whenever the house is unoccupied, a lighting sequence designed to imitate an occupant getting up to investigate can be used. This will depend upon three conditions being true : If it is dark, the system is in Holiday Mode and it is after 12.00 AM. This could firstly switch the Bedroom Light(B2) then after 5 seconds switch the Landing light(B3) and then after another 5 seconds the Hall light(A1). The lights will stay on for 10 minutes before they are all finally switched off (see Applications Manual on CS-Xpress CD ROM).

Monitoring Outside Movement

During Security Off Mode, Outside PIRs can trigger announcements of programmed descriptions e.g. Front Garden , Garage , Driveway on the Keypads using Response 59. External movement can be programmed to trigger user-recorded warning messages like You are trespassing, please leave the area at once In stores, movement in certain aisles may also trigger more friendly messages.

CCTV

If you intend to use outputs to switch camera images when the outside PIRs are triggered, you can use Comfort Relay Boards (RLY01) which have 4 x 12V on the Outputs and use a response per Camera to say: switch cam 1 ON, and then 2, 3 & 4 OFF. All the screen wires are commoned together and the relay common terminals are connected together and linked to the centre positive signal and through to the VCR or monitor s input. Each of the camera feed signals are linked to the

normally open side of each relay. Whichever relay operates will present it s own image to be seen on the monitor.

It is usually better to mount the relay board in a junction box with BNC panel mount socket connectors for 4 video IN and 1 video OUT such as our UNIBOX which allows four Relay Boards to be mounted together or 2 boards on top of the SEM02 zone expansion module. You can use 8-core screened cable for each Camera signal with good results, but for best quality use RG59 cable. You will need a separate power supply if using more than one 12v camera.

The rule of thumb is for the response to do the * explanation above then to start a timer for maybe 20 seconds then do Camera 1 response. Camera one response could stay indefinitely until another Camera changes the selection. Make Camera 1 to be a useful view to settle ON, i.e. a front driveway or courtyard. When the Doorbell is pressed, the front door camera could be switched through. For CCTV also consider the lighting situation. You may also wish to start a a time lapse video machine using a different output (set the VCR record time to 3 minutes at a time).

Lighting

The same external PIRs can be used to operate both camera switching and lighting. With any lighting system, taking the light level into account before switching a light is essential. This may involve either a 'conditional branch' where the response checks for the light level from a photocell on a zone before switching the lights (X-10 address, Response 126) or if your lighting levels are predictable throughout the year, you could use the time of day as a 'conditional branch'. Allow about four response lines per camera for this type of behaviour. Each lighting Response may include one of the 8 timers to switch Off the lights a few minutes later. You can use the Light Sensor s zone OFF Response to turn OFF all the lights at 'dawn'.

Radio Transmitters

Some installations may require radio control of certain zones such as panic switches, arming, or maybe even zone shunting. These can be achieved using stand-alone radio transmitters and boxed receivers such as the Visonic product range. The resistors for each zone would normally be fitted across the relays inside the receiver s box.

Radio-transmitters often have 4 switches available and sometimes customers require their Garage Door or Gate also to be controlled from a single transmitter. This is quite simple to achieve because Garage Doors are often manually opened from with the property using a normally open bell-type push-switch. To provide control using a spare channel of the transmitter, simply connect the receivers normally open relay in parallel across the bell-push terminals.

Automatic Gate Control

Comfort can control gates using the outputs and the 12 Volt relay boards. Often these are triggered by pulsing closed a normally open

contact for 1 second using action code 130 (Response 79 -Output 1), the gate will then close after a pre-set time determined by the gate controller. Photocells protect the gate from closing onto a car and also initiate an opening action when the beam is broken. By using another Comfort output with a normally closed contact in series with the photocell, the gate can be permanently held open once the pulsed open command from the other relay has been sent. These responses can be inserted into the Home Control Menu for manual control as needed. Another application of the this can be in response to a Fire activation. The Open Gate or door command can be given from the Door Station menu when used in conjunction with the Door Station (Response 79 entered in Location 52).

The Force Gate Open response could be inserted into the Fire Alarm Type Response so that the gate opens providing access for the fire service.

Curtain Control

Comfort can be used to operate certain curtain controllers. This can be achieved using two outputs per curtain controller, one to 'open' and one to 'close'. Usually the output is pulsed for about 1 second to trigger the curtain controller. When you write the response to open or close for the Swish Autoglide controller, you can use the 'pulse' action code 130 for 1 second. eg: 130,20,1,255 This will pulse output 1 for 1 second and can open or close depending which switch you wire the relay contact to. If you need to bypass a detector which can see the curtain move add 'bypass zone for say 30 secs eg: 75,3,130,20,1,194,1,0,30,76,3,255 (Bypass Z3, Pulse OP1, Run timer 1 for 30 secs, unbypass Z3.)
This response may be used in Time Programs, Holiday Programs, Home Control Menu or when switching to Security Off in the morning.

It is advisable to consider the position of movement detectors when operating a curtain while the system is armed as this is capable of causing a 'false alarm'. To cater for this, you can install the detector in the corner adjacent to the curtains so that the curtain movement is not in the detector's 'field of view' or write the curtain ON and Off Responses to include the shunting of the zone using the bypass action code(75) then pulse the output to open the curtain then run a 20 second timer and unbypass the zone (76). To save on response lines, write the 'unbypass' response for each curtain separately and use it as the Response which occurs when the timer ends. It is often best to link a light command with the curtain action for use within Holiday Programs, this ensures that the curtain closes before the light switches ON otherwise, onlookers may be able to see into the room and notice that the room is unoccupied if the light switches ON before the curtain has closed. **Motorised Shutters** may also be controlled using the outputs and relays. For instance, closing the shutters if someone should approach the building while the system is set to Away Mode or opening the shutters if the fire alarm should be activated.

SEP01 & SEP02 (17- 64 Zones, 17- 64 Outputs)

The Slave Expansion Panel SEP02 consists of a small boxed unit (Unibox), with a 12V Slave Expansion Module consisting of 8 zones / 8-outputs and 1 Bell output. LEM boards model LEM01 can be piggy-backed over this SEM PCB using 25mm posts. **(16-zone boards model LEM03, cannot be used with the SEP s or for installations with more than 24 zones).** It is connected to the main panel via three cores of the cable: KA, KB, and 0V. Screened cable MUST be used. If other parts of the building may require keypads and intercoms, then the Voice and Mic will be required at the SEP02. Simply, use an additional two cores from the CPU run to the SEP02 from the Voice and Mic terminals. Each SEP02 can provide either 8-zone inputs and 8 outputs , or 16-zone inputs and 16 outputs if the LEM01 is fitted within. If zone expansion is a future requirement, run the comms cable to convenient expansion positions where the SEP02 panel may be mounted during the initial installation.

The SEP02 should be powered from the main CPU 12v supply or from supplementary power supplies should the overall system current required be greater than 850mA.

The SEP01 is the same PCB but is mounted within a large panel with a 230v power supply and battery backup support.

ICs

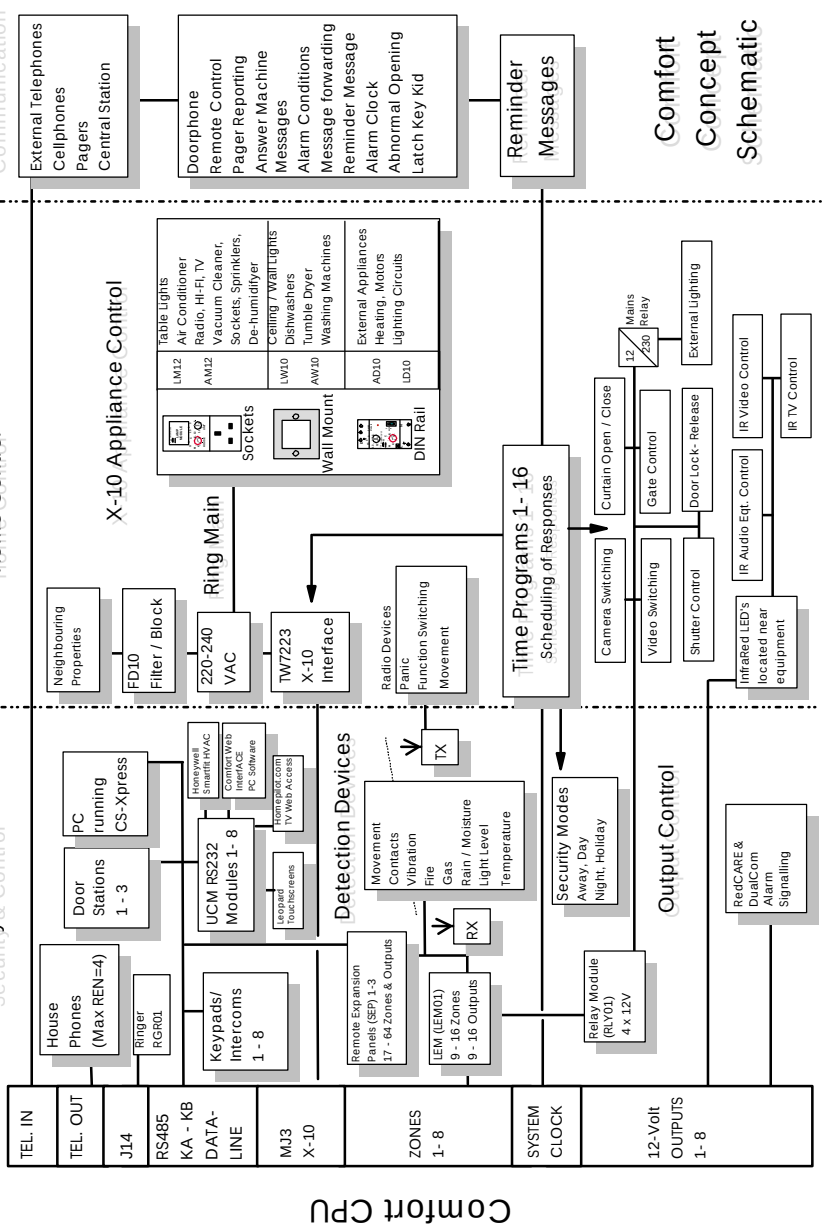
- U4 - System configuration Nonvolatile Memory (NVM). This is where all Engineer programming information for a system setup is stored.

  Part No: 24LC32A for 8 - 24 zone and 24LC65A for 32 - 64 zone
- U1 - Program IC. This IC contains the firmware release for all of Comfort s embedded behaviour. This can be replaced for firmware updates.
- U7 - Voice IC. Comfort s voice menu and messages etc. are stored here. It may be reprogrammed onboard for other vocabularies such as Office using a Voice Programmer Board (VPM01) inserted into J11.

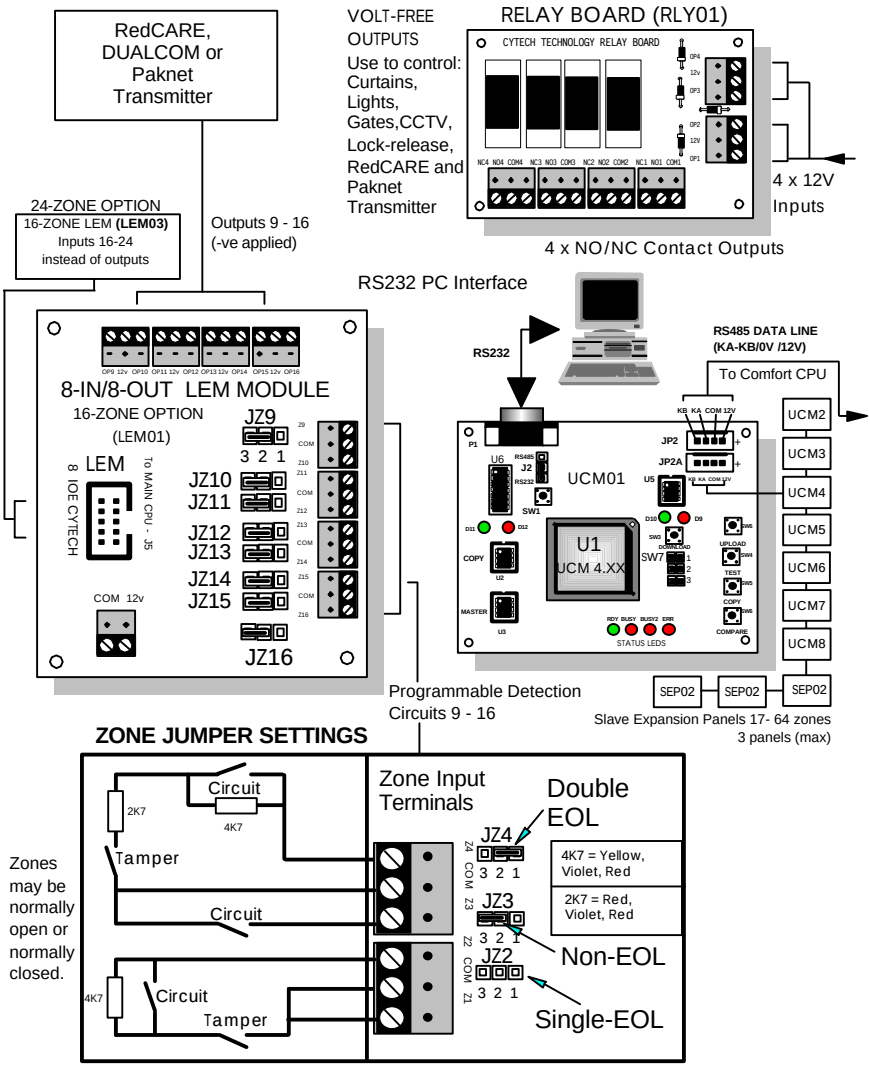
Connections

- MJ1 - TEL-IN. Connection to Public Switched Telephone Network..
- MJ2 - TEL-OUT. Connection to House phones.
- MJ3 - Connection to X10 /TW7223(Europe) ior TW523(US) Interface.
- JP1 - 15 VAC Transformer Input connection.
- JP2 12V Battery Connection for Sealed Lead-Acid Rechargeable Battery.
- JP3 - JP6, Zones 1-8 input connections. Circuits are DEOL, SEOL or Non EOL.
- JP7 - 12V Auxiliary and Switched Supply (3 position terminal block).
- JP8 - RS485 KA/KB (2 position terminal block).
- JP9 - 12V Siren Connection for 12 Volt sirens, SRN terminal is the trigger, SRN+ is 12V positive hold-off. 0V may be taken from GND at J4.
- JP10 - Speaker and Strobe Connection for Speaker and 12V Strobe Light.
- JP15 - RS485 Connection to PC and BUS interfaces (Pin 1 - 4 = 12V,0V,KA,KB).
- J2 - Header for Program Transfer Board connection
- J4 - Connection to Panel and Bell box Tamper Switch. Short terminal block with wire-link if tamper Input is not used.
- J5 - LEM Connection Point for ribbon cable.
- J6 - Mains Power On LED header. (no resistor required, it is on the PCB)
- J11 - 9 way header for voice Programmer Board
- J13 - For Australian use only
- J9, J14 - Headers for connection to Ringer Board J1 and J2.
- J15 - 4 way header for RS485 Upload/Download and 12v supply.
- J23 - Test connector (4 way header)

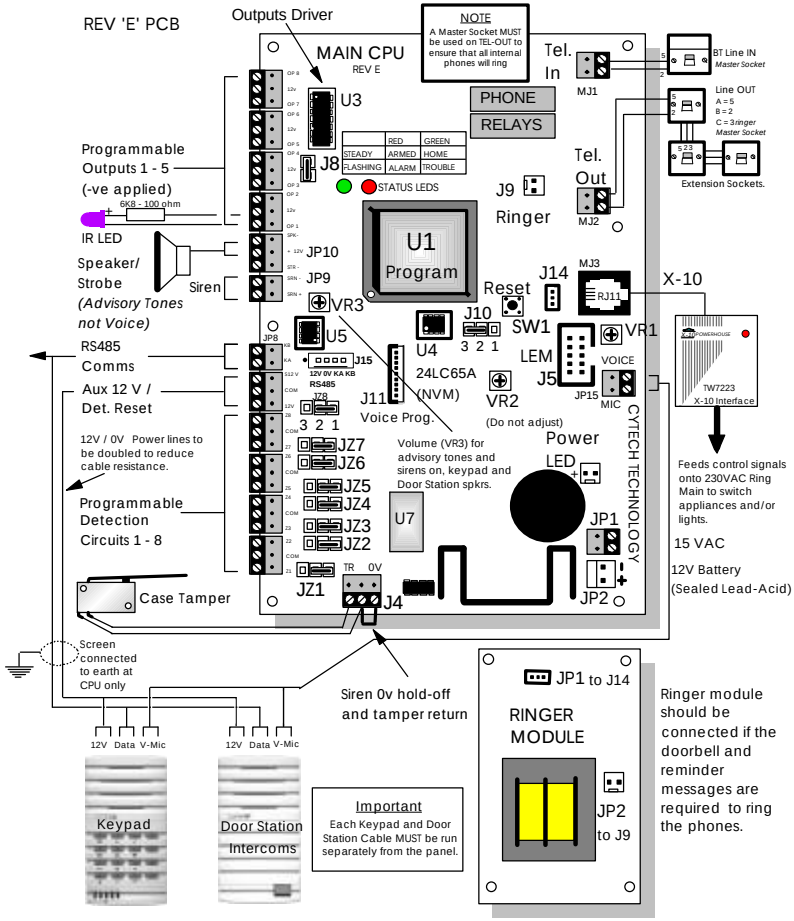
Schematic Block Diagram - Comfort System



Schematic Diagram - Peripherals



PCB Layout


REV 'E' PCB
Outputs Driver
NOTE
A Master Socket MUST be used on TEL-OUT to ensure that all internal phones will ring
MAIN CPU
REV E
Tel. In
MJ1
BT Line IN
Master Socket
Line OUT
A = 5
B = 2
C = 3ringer
Master Socket
Extension Sockets.
U3
PHONE
RELAYS
Programmable Outputs 1 - 5 (-ve applied)
6K8 - 100 ohm
J8
STEADY
FLASHING
RED
ARMED
ALARM
GREEN
HOME
TROUBLE
STATUS LEDS
J9
Ringer
Tel. Out
MJ2
IR LED
Speaker/ Strobe
Siren
(Advisory Tones not Voice)
JP10
JP9
U1
Program
Reset
J14
MJ3
X-10
RJ11
VR3
U5
U4
24LC65A
(NVM)
J10
3 2 1
SW1
VR1
LEM
VOICE
J5
JP15
MIC
VR2
(Do not adjust)
TW7223
X-10 Interface
RS485 Comms
Aux 12 V / Det. Reset
J15
12V 0V KA KB
RS485
J11
Voice Prog.
Volume (VR3) for advisory tones and sirens on, keypad and Door Station spkrs.
Power LED
CYTECH TECHNOLOGY
12V / 0V Power lines to be doubled to reduce cable resistance.
Programmable Detection Circuits 1 - 8
JZ7
JZ6
JZ5
JZ4
JZ3
JZ2
JZ1
U7
JP1
JP2
15 VAC
12V Battery (Sealed Lead-Acid)
Feeds control signals onto 230VAC Ring Main to switch appliances and/or lights.
Case Tamper
TR 0V
J4
Screen connected to earth at CPU only
Siren 0v hold-off and tamper return
12V Data V-Mic
12V Data V-Mic
Keypad
Door Station Intercoms
Important
Each Keypad and Door Station Cable MUST be run separately from the panel.
JP1 to J14
RINGER MODULE
JP2 to J9
Ringer module should be connected if the doorbell and reminder messages are required to ring the phones.

Jumper Settings and Adjustments

- SW1 - Reset Switch. This reset switch should be pressed after downloading a configuration from CS-Xpress or after changing a Location setting using Menu 7,4,1.
- J1 - (2 position header) - Leave Open
- J Z1 -JZ8 3x8 way header - Insert shunt in the position nearest the terminals for the corresponding Zone 1 to 8 if no EOL resistor is used for the zone. Insert a shunt in the position away from the terminal block if Double EOL resistors: 2K7 connected in series and 4K7 is connected across the contact.
- J10 (3 position header) - Shunt inserted over position 2 and 3 (normal position). This jumper is used when programming a new vocabulary using the Voice Programmer.
- J19 - 2 way header. Volume setting for Siren sounds on Keypads. Shunt for louder.
- VR3 - Speaker Volume for advisory tones. Alarm tones (e.g. for Intruder and Fire) are always at full volume regardless of this setting.
- VR1 - Keypad/Door Station Mic level adjustment
- VR2 - **Do not adjust**! - Telephone line length compensation-echo cancellation

Location of Panel

Do not remove printed circuit boards from the cabinet as they are statically sensitive and may be damaged with incorrect handling. Take precautions against damage by static discharge by using an anti static wrist strap tied to a suitable earth point. Remove the knockout holes, protect with rubber grommets and mount the cabinet to the wall.

The system should be mounted in a dry area, with access to an un-switched AC power source and incoming telephone line.

Panel Mounting

The control unit should be fitted at an early stage of the installation so that runs can be connected in as they are completed, thus verifying that the zone/cable/detector circuit is operational and the relevant electrical testing and connections may be performed during daylight hours. This can be done using the backup batteries even if no mains power is available. Run large 40-60mm trunking across the top or bottom of the panel with cut-outs allowing the cables to enter the panel at any mublicon entry point. Screens should be tied back to the earthing posts as they enter the panel. Mount the fused spur connection box ideally to the top left of the panel, it should be possible to run 1mm flat twin & earth cable from the spur box and under the panel to the mains cable entry near the transformer. **The cable MUST be**

firmly anchored using the cable tie and adhesive pad provided next to the cable entry hole. Do not run mains cable through the same entry hole as low voltage circuit cables. Sharp metal entry holes should be protected with edge strip or rubber grommets. Always connect the earth from the mains cable to the panels mains earthing point terminal block, use earth sleeving to protect the exposed earth wire. Try to run cables neatly through the centre of the panel casing in a loom, with branches coming from the loom as each zone cable is connected to the terminals.

Clearly label all cables with their zone number and detector location.

Mains Supply - 230 VAC

The transformer should be connected to an un-switched fused spur power supply outlet. Where regulations require, connect a 16 AWG green-jacketed solid conductor ground wire from the earth terminal on the studs provided on the enclosure to a metal pipe, grounding rod or other established earth ground for protection against lightning-induced surge.

For UK Installations: The mains installation should be carried out by a qualified electrician in accordance with Electrical Wiring Regulations (BS 7671) and the current IEE regulations. As this is a permanently connected equipment, the fixed wiring must have a readily accessible disconnect device, e.g. Un-switched fused spur.

Ensure that continuous current supplied from the AUX terminals and outputs is less than 850 mA.

Ensure the supplied green earth bonding lead is connected to the front cover using the spade prior to replacing the panel lid.

Back-Up Battery Supply - 7Ah (JP2)

Connect a 12V 7 AH sealed lead-acid battery to the BATT (JP2) terminals. The Zone Expansion boards requires less than 35 mA. Connect the positive terminal of the battery to the + terminal of JP2 and the negative terminal of the battery to the - terminal of JP2. The battery provides standby power to the system in the event of power failure and supplies additional current when required, e.g. to drive the siren during an alarm. The battery current is limited to 2.5A by a resettable fuse (F1).

The system may not operate correctly without a backup battery.

Back-Up Battery Calculation.

Standards require that alarm systems must be designed and installed with adequate battery back-up capacity to run the system for a minimum number of hours upon a loss of mains power. To do this, first establish the system Quiescent Current (QC). This value in Amps

should be multiplied by the minimum time duration that is required under the relevant standards. The Amp/hour battery size should be of a higher capacity than the result of the calculation. It is always advisable to install the highest capacity battery which can physically fit into the enclosure (7A/hr).

E.g.: QC = 0.650 A *(650 mA)*

8 hours required stand by

QC x 8 = Battery Size A/hr (Min)

0.650 x 8 = 5.2 Amp-hour, Next available Battery size is **6 Amp-Hour**

Factory Restart

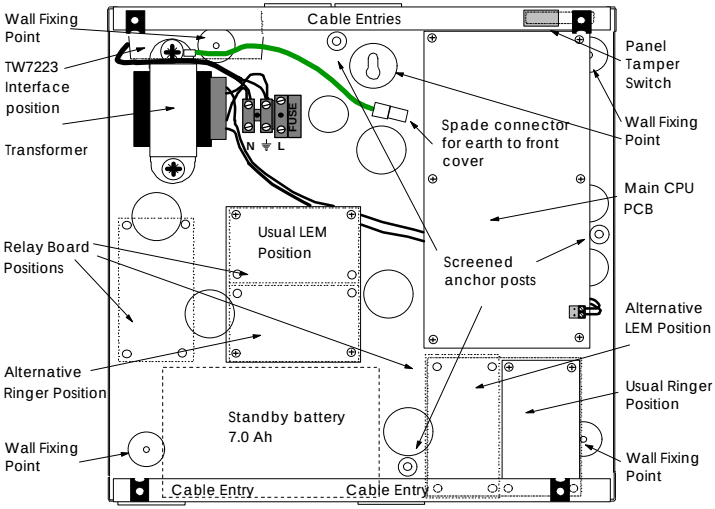
Comfort does not have a factory restart setting. The configuration is stored within U4 Non-volatile memory (NVM), so either this can be replaced with a formatted U4 with default values or you can use CS-Xpress to overwrite the current configuration with a default template. You can write a default NVM using the UCM01 module s copy socket by inserting a master default NVM placing a spare 24LC65 IC in the copy socket and pressing Copy on the UCM01 local button. This takes around 12 seconds to write.

Cable Routing / Requirements

The minimum cable type to be used for detection devices, sounders and Keypad and Door Station connections should be 6-core alarm cable (7/0.2mm). This has a resistance of 8 ohms per 100 metres. Screened cables are preferred for Keypads, Door Stations and each one run from the panel separately. Use spare cores to double-up the 12V power supply cables to the each control station to reduce circuit resistance and further improve current performance.

Ensure that all RS485 communication lines and detection circuit cables are kept away from mains supply cables. Comfort s enclosure is designed with the Engineer in mind. Large plastic inserts called mublicons allow large gauge trunking to be brought to the panel in four locations. Extensive rear access is also possible using the many entry holes in the backplate. Various mounting positions are provided for LEM s, Relay Boards and Ringer Board.

Screened cable is essential where system wiring is to be run adjacent to cables that produce RFI or are switching high-current loads. When using screened cable connect the screen to earth at the Comfort Panel end ONLY using the supplied anchor posts shown below. At the keypad end, just cut the screen short and insulate.



Keypad and Door Stations

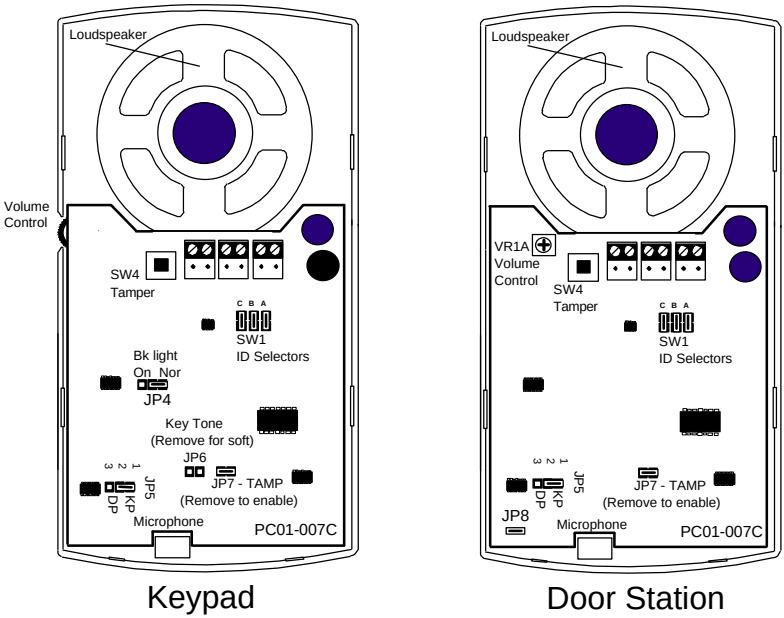


Figure 2.1 - Keypad and Door Station Settings

Open the Keypad housing by gently pushing a screwdriver into the two slots at the front bottom one at a time while simultaneously prizing the front cover from the base until the catch releases. **Do Not insert the screwdriver in too far or twist the front cover away from the base as this will break the catches.** Separate the front and back housings by pulling the top housing firmly and squarely away at the bottom edge.

Mount the back housing on the wall using the screws supplied. Connect the 6 wires from the terminal blocks on the Keypad to the Comfort PCB according to the connection diagram above. The Comfort Panel should be switched off during the Keypad installation.

The total resistance of each 12V and ground wire run should be less than 5 ohms. If necessary, use an extra pair of wires for 12V and 0V ground.

If more than one Keypad/Door Station is used, connect their 12V and ground wires directly back to the Comfort control panel. Do not connect in series.

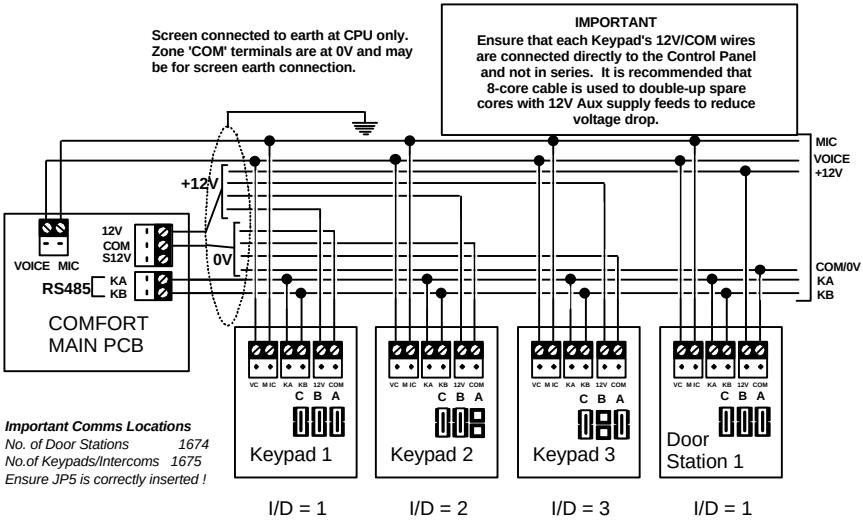


Figure 2.2 - Keypad and Door Station Connections

Keypad PCB Versions

The PCB version of the keypad is silk-screened on the bottom right corner of the board. PC01-007B does not support the Infrared receiver function which is found within the KP02, while PC01-007C (released in January 2001) does support Infrared receiver function, with the appropriate components soldered in, as well as a shunt to permanently turn on the backlight The differences in the shunt settings are described below. Keypads (KP01) after January 2001 will also use this version PCB and may be converted for use as Infrared receivers by soldering 2 components, an IR Led (3 legs) and a capacitor. This IR led may be mounted up to 100m away from the keypad PCB, in which case the cable running to the LED will require soldering on the KP01 or KP02 PCB.

Shunts

JP4: 3 pin header for Backlight selection. Normal position for backlight on when key is pressed, Entry alert or Alarm. On position for Backlight permanently on. Default - Normal . **This applies to PC01-007C only**

JP5: Keypad/Door Station selection: Shunt positions 1 - 2. for Keypad, 2 - 3 for Door Station. **For PC01-007C, JP5 is horizontally oriented**

JP6: Keypad key Beep volume. Short for louder beep volume. Default Open (soft). **Not on Door Station PCB**

JP7: Tamper Shunt. Short to disable tamper switch. Default shorted (disabled)

JP8: Disable Doorbell button. When shunt is removed, door station button is disabled. The shunt is removed when the Door Station is used as a keypad (JP5 to keypad position) for announcement. **This applies to PC07-007C only.**

SW1: ID selection

Setting the Microphone Levels

On the Comfort CPU, VR1 sets the MIC recording and listening level for the Microphone. Adjust this trimmer when in two way Voice Station Mode between a telephone or mobile phone and keypad or Doorphone rather than between two keypads to so that any feedback may be adjusted out. This is normally set at about 50%. In practice the volume of the internal speaker volume within the doorphone need only be slightly off zero. While in Doorphone menu between a telephone and a Doorphone (kept at least 4 metres apart), turn the pot fully clockwise and then slowly turn it anti-clockwise at the same time being aware of the start of feedback. The correct level would be about 2-3mm off hard right.

Keypad / DoorStation ID Selection:

Set the headers SW1 according to the ID of the Keypad according to the table

ID	SW1- C	SW1 - B	SW1 - A
1	Short	Short	Short
2	Short	Short	Open
3	Short	Open	Short
4	Short	Open	Open
5	Open	Short	Short
6	Open	Short	Open
7	Open	Open	Short
8	Open	Open	Open

If a Door Station is installed, then a maximum of 3 Keypads may be installed using the Comfort PSU. The ringer module RGR02 may also be fitted. This rings the phone for 30 seconds whenever the doorbell is presssed during occupied modes. Up to 8 Keypads may be installed in a system and including a maximum of 3 Door Stations (After version 4.100). If additional Keypads are required (4-8), a supplementary 12VDC power supply rated at 1A DC with battery back-up must be installed. The negative (com) of the Comfort CPU auxiliary 12V output should be connected to the negative 0V of the PSU as a reference. Keypad ID s must be numbered consecutively, for example, if there are 2 Keypads they must be set to ID s 1 and 2.

After termination of the wires and ID selection, close the Keypad by hooking the front housing to the back housing along the top edge and pushing the bottom of the front housing into the back housing.

Switch on power to the Comfort Panel. A short beep should be heard on the Keypad followed by "Security Off". The appropriate indicator LEDs should light up. Now, program the number of Keypads and Door Stations in the next section.

Door Station as Intercom

The Door Station can be used as an intercom within the premises, by making it appear as a Keypad. Set JP5 so that the Door Station is a Keypad. Set the ID switches in SW1 to select the next available address for a Keypad. Program Location 1675 to correspond to the number of Keypads in the system. Reset the Comfort panel. Pressing the Doorbell button will initiate the Intercom mode just like pressing the F + 8 function key. The Doorbell button also switches communications to talk mode when communications is established. However, this intercom cannot terminate the Intercom Mode, as there is no F key. Intercom mode can be terminated by the other Keypad or can be left to time out . For more natural conversation use the telephone to answer the Door Station or Intercoms and to listen to Keypads use Menu 5.

If Ringer Module RGR02 is fitted with Door Station, ensure that Location 40 (Table 35) is set to a value of 4 if RGR01 is fitted then Location 40 can be set to 0 .

Speaker and Strobe (JP10)

Connect a strobe light to the 12VF and STR - outputs if needed. Observe the polarity. For UL Installations use a UL approved strobe, eg Wheelock LS1-12-VFR. In the event of an alarm, the strobe is turned on until the system is disarmed. The Strobe and speaker terminals have a combined current limit of 1 A, protected by a resettable fuse (F3)

Connect an 8 ohm 5W (minimum) speaker to the SPK- and 12VF outputs. Polarity is not important for a speaker.

The backup battery must be connected for the Siren to work properly.
When the system is running on battery alone, full siren sounds will not sound through keypads to preserve power, this is not a fault .

Siren / Bellbox Connections (JP9)

Some supervised bell boxes may sound as soon as they are connected. If so, they may need a pull-up resistor (1K-ohm) placing between the +12V hold-off and their negative trigger terminal, this should be inserted at the bellbox end. Should you wish to work on the bellbox connections or open the control panel, you can immobilise the system from causing a tamper alarm by entering Engineer Test Mode via Eng. Menu 8,6,1 for ON. Upon de-selecting this option 8,6,0 for Off, the system will enter Security Check Mode and will report any faults through the keypad. Tamper Alarm 1 means the Panel Tamper or Bellbox Tamper switch or Connections are open or incorrect.

SRN- This is the bell trigger output which can be programmed for SAB or SCB (Siren Reverse) operation as follows: Select Siren Reverse Option ON for SCB in Engineer Menu 4,3. *SAB, Siren Reverse OFF=Default.*

SAB: SRN- will switch to 0V on alarm and will provide a maximum of 700mA.

SCB: SRN- will provide a negative hold off (500mA), which is removed on alarm.

The Tamper Connections offer 24 hour protection. Breaking the tamper circuit will cause a Tamper Alarm signal on the speaker and can cause a dial out to programmed phones. These settings are in Alarm Type 11 (Tamper Alarm).

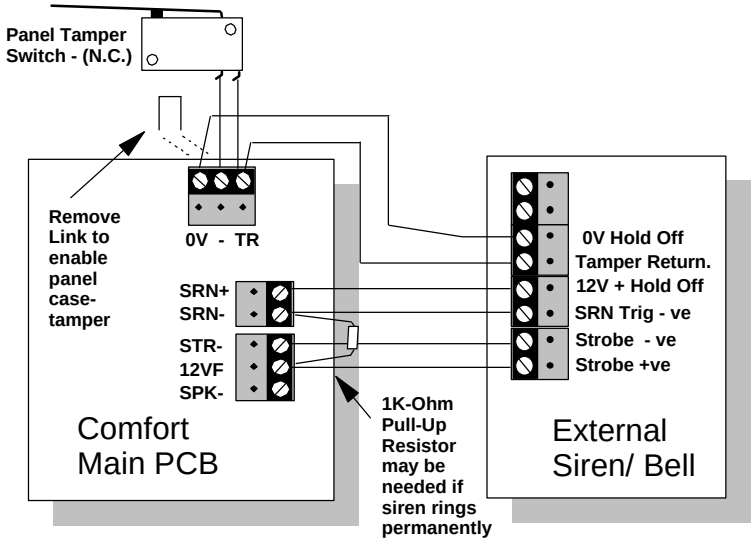


Figure 2.3 - Siren /Bellbox Connections

COMFORT	TR	12VF	0V	SRN-	STR-	NOT USED
CEQURA (CQR)	A/T RET SIG	HOLD OFF +12Vdc	HOLD OFF -12Vdc	SIREN TRIGGER	STROBE TRIGGER	SET
GARDTEC	TMP RET	12V SUPP+ STROBE+	12V SUPP- F TMP FEED	BELL SW-	STROBE-	BELL SW+
VENTCROFT	RTN	HOLD OFF+	HOLD OFF-	TRG	STB	

Figure 2.4 - Bellbox Model Connection Chart

The above chart can be used to assist in the connection of Comfort some leading makes of bellbox in the UK.

Telephone Connections

Single Line Telephone Connection

Comfort must be connected in series between the incoming telephone line and the house phones using solid core telecom cable and not stranded alarm cable. Use the proper jointing IDC (Krone) tool for making connections rather than a screwdriver. Connect the incoming telephone line to the TEL IN Terminal Block. Connect the telephone wires going to the house phone(s) to the TEL OUT Terminal Block. The system will work with any tone-dialling telephone. For retrofit applications where the panel is sited away from the incoming telephone line, a single cable (6 or 8 core solid) can be used to divert the telephone line through the Comfort panel using only 5-cores (see fig 2.5). A ringer module (RGR01 or 02) should be used if the doorbell and reminder messages are required to ring the telephone.

Telephones, facsimile machines and other telecommunications equipment may be connected to the Telephone OUT socket.

Do not connect any other equipment between the incoming telephone line and the control panel. Also, do not connect any other telephone equipment including fax machines and PABX in parallel with the control panel. Violating the above conditions may prevent the control panel from seizing the telephone line to dial out during an alarm condition. If telephone equipment are connected in parallel with the system, a Phone Trouble condition will be generated if the parallel equipment is used.

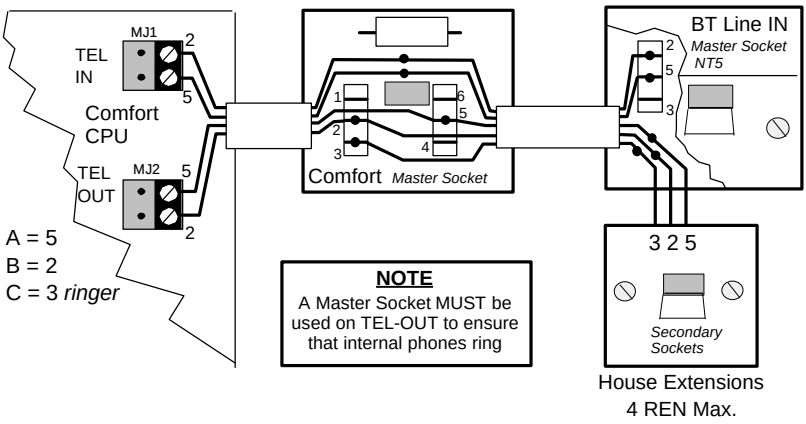


Figure 2.5: UK Retrofit Telephone Connection example

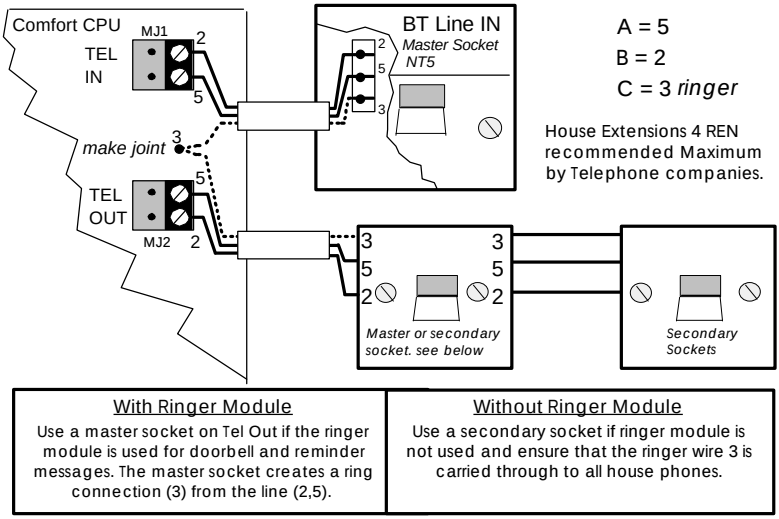


Figure 2.6 - UK Single Line Telephone Connection

UK Installations should take note of the ringer module options described above.

UK - BT Highway (*ISDN*)

Comfort cannot be used across digital lines, however, the service such as BT Highway has two analogue sockets available on the Junction Box. Thie main line is provided with a Master Socket, connect from this socket directly to Comfort s TEL IN socket and Comfort s TEL out should be connected to a new master socket which will feed the house extension sockets. This is important to enable the phones to ring from both the doorphone and an external phone call. Additionally, if you find problems with dialling out through Comfort using local phones (ie. You hear a BT recorded message) try reversing the polarity of the incoming line into Comfort, ie, reverse the connnections A and B leading into Comfort.

Remember that the analogue port may not function at times when both digital lines are being used for a fast internet 128k connection and could result in a phone trouble condition being generated on Comfort. This (Line Cut) may de disabled if absolutely necessary (See next item).

Parallel Phone Connections

If it is not possible to run the incoming telephone line directly to the TEL IN terminals, it is possible to connect TEL In parallel with other phones. See Worksheet Table 35 and 17 under Ignore Line Cut or phone trouble setting.

This method of connection is not recommended especially for UL installations or monitored systems, and is only applicable to Home Automation installations where security is not a concern.

UK - ISDN Digital Phone Systems (*ISDN 2*e)

Comfort can connect to Digital Phones systems, but only onto an analogue extension or terminal adaptor. The ringer module is not required for such installations as the system doorphone operation has to be set-up to initiate a dial-out in all modes. This is achieved using responses. Full details are provided in the Applications Manual or on the Technical Website **www.comfort.org.uk/technical/indexapp.html**.

Connection to Keyphone and PABX systems

A key telephone system may be to the TEL OUT socket. To access the system with a key telephone, press the button which selects the incoming line to which the system is connected, and press *, sign-in code and # in the usual way. The system cannot be connected as an extension of a key telephone system. Remote telephone access can be achieved by dialling into the exchange line to which the system is connected.

A PABX may be connected to the TEL OUT socket. A telephone may be connected in parallel to the PABX, to be used for local system access. Remote telephone access can be achieved by dialling into the exchange line to which the system is connected. See Figure 2.7 for connection

With this method of connection, the extension phone will not be able to access the system if the CO line for Comfort is in use. Also, for remote access, the user must dial the precise number and not the hunting line to ensure that Comfort can receive the call.

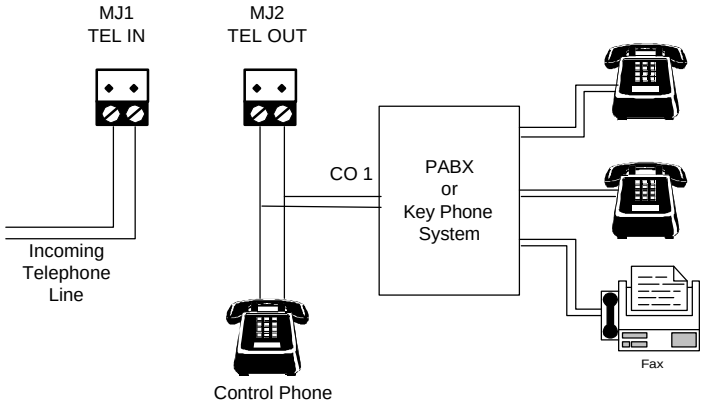


Figure 2.7 - Connection before PABX/Keyphone System

Connection to extension of PABX (Not for UL Installations)

It is also possible to connect the system as an (analogue) extension of a PABX, for non-monitored systems. A normal telephone may be connected to the TEL OUT socket for system access and for use as a

normal extension phone. In this case, the system should be connected to an extension which is designated to be connected to one of the exchange lines in the event of a power failure. If the system is connected as an extension of a PABX and it is required to dial a number to obtain an outside line, program the PABX Option in the Engineer Menu (7,2), and the PABX Key (7,2,1) to the prefix to be dialled to get an outside line (usually 9 or 0). **Do not include the 9 or 0 in the telephone numbers programmed for dialout.** In the event of a power failure and a dialout is required, the system will dial the numbers without the prefix, as it assumes that it is connected to an extension that has direct access to the exchange line during a power failure. Connect the PABX to the same electrical circuit as the system so power failure of the PABX can be monitored. Other extension phones can access the system by dialling the extension to which Comfort is connected.

The system must not be connected as an extension of a PABX system for UL- approved or monitored installations, as it may not be possible to seize the telephone line to dial out during an alarm. Also it would not be possible to detect telephone line cut on the incoming exchange lines.

Zone Input Terminals Z1- Z8 (JP3 - JP6)

Each zone may be wired as Normally Closed (NC) or Normally Open (NO). Any unused zones should either be programmed as Zone Type 0 with the zone inputs left open and corresponding zone header (JZ1 to JZ8) with a shunt (shorting link) in the position close to the terminal blocks for Non EOL resistor or left programmed but with a wire loop in the zone terminal.

Normally Open and Normally Closed contacts cannot share a zone.

Circuits without EOL Resistor

This is applicable for UL Grade B Household Burglar Alarm Systems units

Wire zones according to Figure 2.8 for Normally Closed Contacts and Figure 2.9 for Normally Open Contacts.

The corresponding 3-pin header for the zone, JZ1 to JZ8 (for zone Z1 to Z8) should have a shunt (shorting link) inserted nearest the terminal block (2 to 3) when no EOL Resistor is used .

In this configuration, the system does not differentiate between a contact open, open circuit wiring (tamper) condition, or contact closed and short-circuit wiring (fault) condition. The Zone Settings in the Engineer menu determine if the contact is Normally Closed (N.C.) or Normally Open (N.O.). N.O. and N.C contacts cannot be connected on a single zone.

To provide a **global tamper** protection for these types of zone configurations, assign one zone as a tamper zone type 20 and connect all zone wiring tampers in series to this tamper zone.

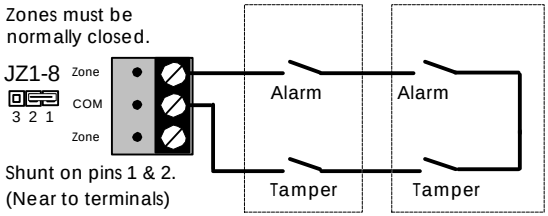
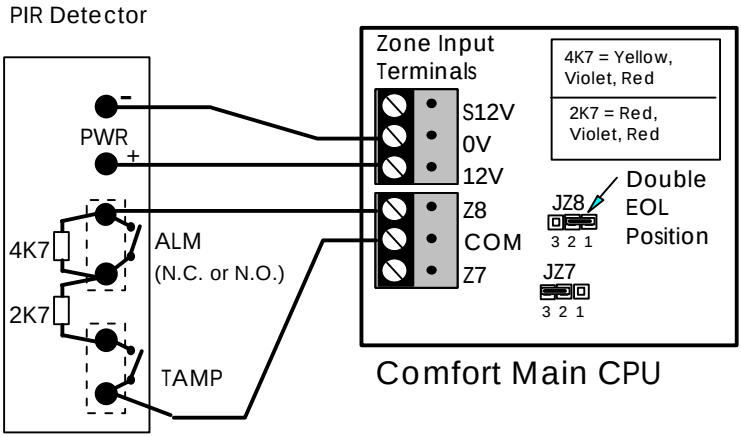


Figure 2.8 - Normally Closed Contacts in series without EOL Resistor

Circuits with 2 EOL Resistors (Double End of Line)

This is applicable for UL Grade A Household Burglar Alarm System units.

Wire zones according to Figure 2.10 for N.O and N.C contacts. The Zone Settings in the Engineer menu determine if the contact is Normally Closed (N.C.) or Normally Open (N.O). N.O. and N.C contacts



cannot be connected on a single zone.

The corresponding header for the zone, JZ1 to JZ8 (for zone Z1 to Z8) should have a shunt (shorting link) inserted in the top position.

Figure 2.10 - N.C or N.O contact with 2 EOL Resistors

The 2 EOL resistors should be connected at the contact and not at the control panel. With 2 EOL resistors connected in this way, the system is able to distinguish open and closed contacts from open circuit and short circuit wiring providing full supervision of the zone contacts and cables. Any short or open circuit fault will trigger a Zone Trouble Alarm which can be reported to the programmed phone numbers. Where double end-of-line resistors are used, the following circuit resistances should be measured and verified on the zone wiring PRIOR to their connection into the zone terminals. Use them as a guide when commissioning a system or tracing a fault.

Also check that there is no short circuit between the 12V auxiliary supplies and zone circuit wiring and the power cables connected to the auxiliary supplies do not contain any shorts between 0v and 12V.

Status	Zone Resistance (Ohms)
Closed /Healthy	2 K 7
Open / Active	7 K 4
Tamper / Fault	Open circuit (infinity)
Shorted / Fault	zero

4-wire Smoke Detectors (End Of Line)

Smoke Detectors are usually connected as Normally Closed (N.C). The corresponding Header JZ1 to JZ8 should have a shunt (shorting link) inserted into the position away from the terminals. Smoke and Heat Detector zones are programmed as Fire Zone Type 23. A Pulsed On/Off siren pattern indicating Fire Evacuation is produced when this zone type is activated (by default). If the zone wiring is cut or open-circuit or shorted, a Zone Trouble alarm is generated for fire zones using EOL resistors.

Connection of Multiple Shock Detectors to a zone

The system has the unique ability to announce the type of the activated zone during Security Check (during arming) , alarm history, alarm tracking, and event log. So if more than one detector is connected to a zone input, it should ideally be of the same type and in the same location, for example, magnetic contacts for several windows in the same room. The following diagram shows shock detectors on the same zone. Some active vibration detectors such as Optex can latch their LED on following an alarm for identification. To make the most of this feature, supply the detectors via a normally closed relay connected to an output. Use the arming response (location 1850) to pulse the output using a response to reset the detectors during arming by interrupting their the supply, this may announce their zone briefly during arming.

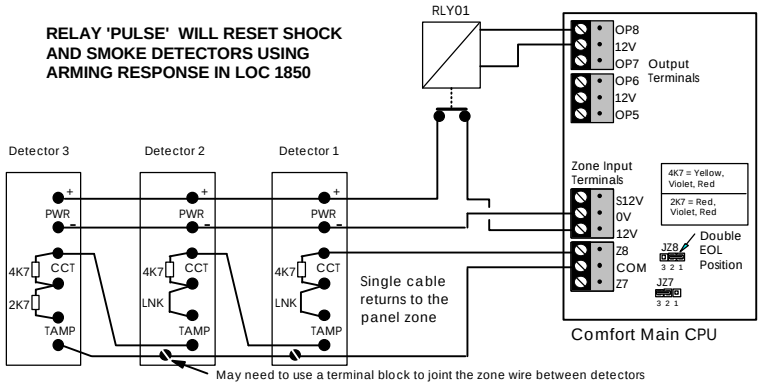


Figure 2.9 - Multiple Shock on one zone with EOL Resistors

Do not mix Fire Detectors with Burglary Detectors under the same zone.

Tamper Input (J4)

The terminal J4 is used in different ways depending on the country. The European Versions are supplied with a 3-way block providing a spare terminal for series connection, and International Versions are supplied with a 2-way block. J4 can be used for CPU case protection and/or in series with External Audible Siren connection. (0v and Tamper Return). This is a 24 hour monitored tamper input and will caused a full alarm (Tamper Alarm Type 11) if the circuit is broken during any mode. You can break the circuit without alarm activation by entering User (Menu 3,4,2) or Engineer (menu 8,2) Walk Test. A tamper switch may be connected to the TAMPER input (2 pin Terminal J4). If not used, short the J4 terminal block with a wire. This terminal may be connected to an external tamper switch of a bell box as well as to the tamper switch of the control panel enclosure as in Figure 2.12. The tamper switches may be connected in series as shown below. The Alarm type activated when the circuit is broken is Tamper (Alarm type 11).

Alternatively, any zone may be programmed as a Tamper zone type.

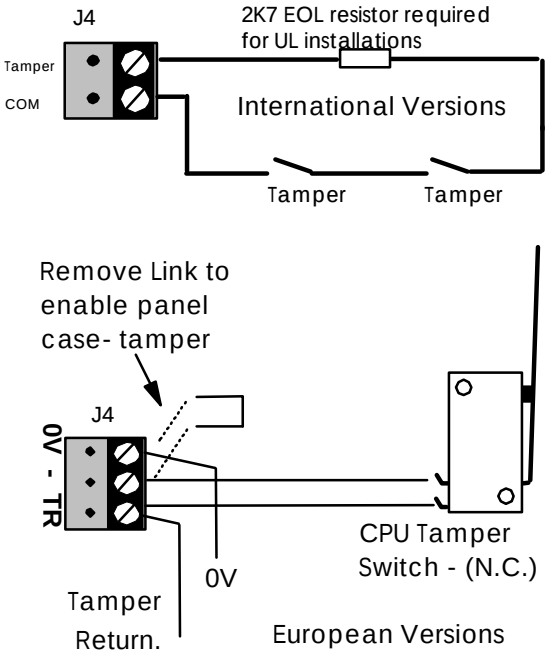


Figure 2.12 Tamper Input connection

'Negative Applied' Detectors

Certain types of detector such as outside PIR s and photocells provide an open-collector output as a trigger rather than a relay output. This type of signal can be connected directly into a zone terminal providing it is a negative signal in one state and floating in the other state. If the signal goes negative when detecting, use a normally-open zone type such as Type 8 (normally-open switch). This is suitable for light sensors or external non-alarming detectors which may be used as monitors to drive Responses for lighting and CCTV applications.

The negative signal should be applied to non-eol zone where the trigger wire connects just to one side of the zone, provided the detector has a 12v supply derived from the panel acting as a reference.

If tamper protection is required on the zone, three wires will be required and the zone jumper should be removed from the header. A single 2K7 resistor should be fitted in series with two of the wires at the detector. The detector s negative trigger should then connect to the side of the resistor and wire which returns to the zone terminal and

NOT to the wire that returns to the zone COM terminal, which is already at 0V .

GJD XL or Opal detectors have both -ve alarm trigger outputs *and* a built-in photocell -ve output. Comfort default uses zone 13 for a light sensor.

Output Terminals OP1 - OP8 (JP11-JP14)

Each of the 8 outputs may be connected to infrared LEDs, indicator LEDs or external relays. Each output is an open-collector transistor output (and pulls down to ground 0V) capable of supplying 200 mA and protected by a resettable fuse (F2). Total current from these outputs together with the switched (S12V) and unswitched auxiliary power (12V) terminals should not exceed 500 mA. If higher current is required, an external supply may be used instead of the 12V terminals (see Supplementary Power Supplies).

For UL installations, the total current from Alarm output terminals, outputs and aux power should not exceed 500 mA

Connection to External Relays

Connect external relays for appliance according to Figure 2.13. External relays should be connected between the 12V terminal and the output terminal. They should be located near to or within the enclosure. Relay module (Model RLY01) has 4 x 12V on-board relays. The CPU and REP s have threaded posts to receive the relay boards singularly or stacked using metal pillars in various sizes.

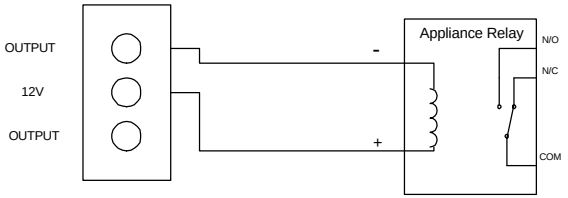


Figure 2.13 - Output Connection to a Relay

Using AC Relays for Feedback

To provide the user with confirmation of the appliance s actual On or Off condition use a 2 way switch and a feedback relay or current sensor, as shown in the figure below. The feedback relay contacts are connected to an input. **Table 26** gives the Locations to enter the Input numbers providing feedback for each Control Key. When configured in this way, the Home Control menu will announce the state of the appliance (on, off, open, closed).

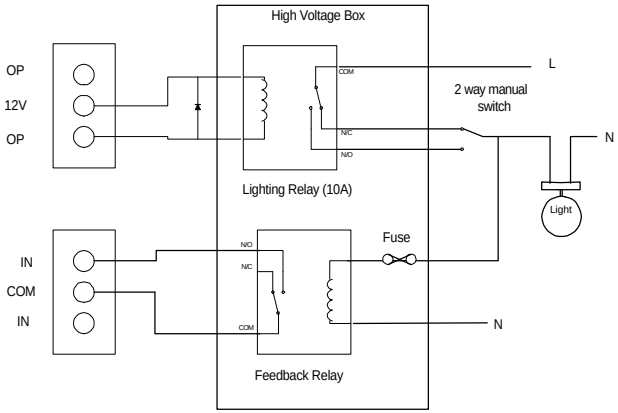


Figure 2.14 - Output Control with Feedback

Instead of an AC operated relay for feedback status indication, a current sensor (Model CSM01) can be used, as shown in the next diagram. The insulated Live mains wire goes through the loop of the current sensor. **Do not put both L and N wires through the sensor.** The current sensor senses the AC current flowing in the mains wire and gives a closed contact status on its output, which is connected to one of the zones designated for feedback. Compared to using a relay, this method has the advantage of not having any contact with the mains voltage. The sensitivity of the current sensor is 100 mA RMS. If the appliance being controlled takes less than 100 mA, put two or more turns of the Mains Live wire through the current sensor.

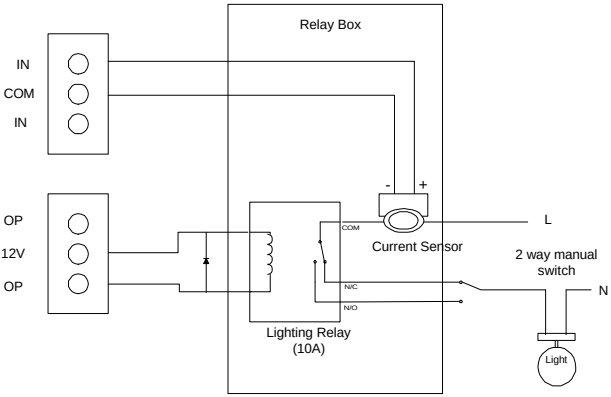


Figure 2.15 Using Current Sensor for Feedback

Connection to Visible or Infrared LEDs

Connect infra-red LEDs to the outputs according to the figure below. A series resistor of 100 ohms 2 Watt should be connected between the infrared LED and the output.

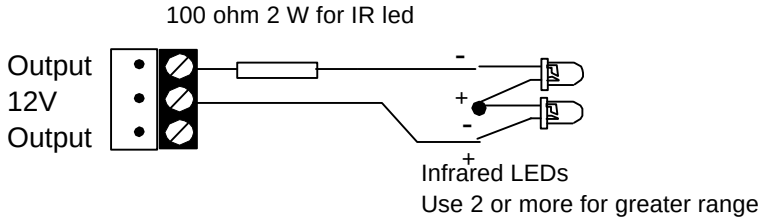


Figure 2.16 - Output Connection to Infrared LED

For Infrared LEDs, the value of this resistor depends on the distance from the LED to the appliance and the incident angle . As a rule of thumb, within 4 meters and 15 degrees, use 100 ohms (2 Watt) Aim to mount the infrared LED as close as possible to the receiver, in a clear line of sight to the receiver. If the Infrared LED is positioned further from the receiver or is pointed at a larger angle, it may be necessary to use **two or more infrared LEDs in series as shown in the figure.** Infrared LEDs from a single output may be positioned to control several appliances within line of sight.

Note that indicator and infrared LEDs have polarity and should be connected in the right direction.

Using Lamps for Output Status

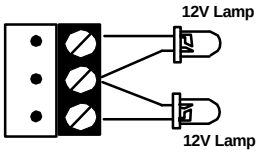


Figure 2.17- Output Connection to Test Lamps

A valuable tool for testing output programming are 12V lamps connected to the Output terminal Blocks. Unlike LEDs, these lamps do not have polarity, and can be connected directly to the Output terminals without the need for a series resistor. These lamps take around 80 mA current so they impose a real load on the outputs, similar to relays.

12V Auxiliary Supply Outputs (12V and S12V)

12V and GND supply 12V to devices which require power e.g. movement detectors. The S12V terminal provides 12V to external devices which require resetting when activated, e.g. smoke detectors. The S12V supply is switched off for 5 seconds whenever the system is disarmed. Total continuous current from these and the Output 12V terminals should not exceed 1 Amp. These terminals are current limited by resettable fuses.

Arming Response

There is now an Arming response (Location 1850) which allows shock detectors to be reset during the exiting procedure instead of at the point that the system is Disarmed (which can reset the detector before the culprit has been identified). You can feed such detectors via a relay which is normally closed and pulse the output feeding the relay using a pulsed output responses (eg. 130,20,8 = pulse OP8 for 1 second),via the Arming Response in Location 1850.

False Alarm on Disarming

This may be caused by connecting PIRs or Keypads to the S12V output instead of the 12V terminals. S12V and 12V share the same terminal block. S12V is meant for detectors which need to be reset on disarming, and is switched off for 5 seconds when the system is disarmed. PIRs programmed as 24 hour zones which have their supply connected to S12V will activate when disarmed. Also Keypads which are powered from S12V will report Communication Failure .

Do not feed PIRs set as 24 hour zones from the S12V supply.

For UL installations, the total current from Alarm output terminals, outputs and 12v terminals should not exceed 500 mA

Using 12V Supplementary Supplies

Larger installations that place additional current demands will require the installation of one or more supplementary power supplies. As a guide, if the normal standby (quiescent) current of the system is greater than 850mA, then an additional 12V DC power supply should be installed. Ensure that the 0V ground of Comfort Main Auxiliary is connected to the 0V of all supplementary 12V Power supplies. **+12V should NOT be commoned**.

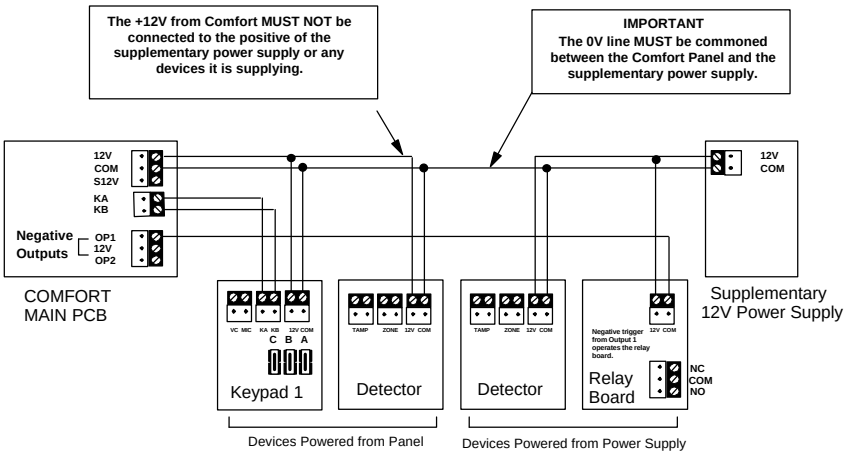


Figure 2.18 Connecting a 12V Supplementary Supply

Connection to RedCARE or Dual*Com*

Some installations may require Line Fault Reporting such that the Central Station is informed when a line cut has occurred using means *other* than the telephone line that has been cut. A stand-alone RedCARE STU or Dual*Com* Paknet interface card may be installed to the system to transfer alarm status and line fault information to a central station using a radio method or loss of carrier method. These devices are triggered using Comfort s outputs and alarm types.

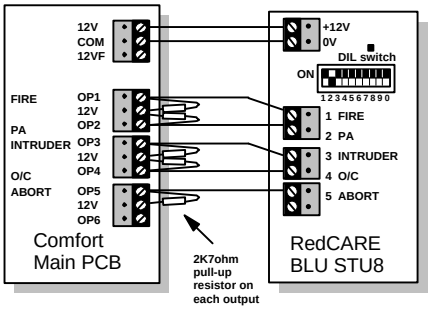


Figure 2.15 - Output Connection to STU

Using Outputs (1-6) The outputs are normally at +12V and switch to 0V (negative applied) in alarm condition and can supply up to 200mA. They cannot be inverted except by using a relay. The outputs are controlled from responses (table 33) inserted in the alarm types menu in table 18. Some of these responses may require the action code 20 inserting within, creating an Engineer Reset requirement upon activation. (e.g Intruder Alarm, Armed Tamper and Siren Tamper Alarm conditions).

The outputs are normally programmed as latching ON = negative applied using action code 128. So when programming the ON responses ensure that the outputs are also switched OFF afterwards using a multiple string command (outputs 1- 6 OFF) when the system is disarmed to Security OFF Mode. This is achieved entering the relevant Response into alarm type 19 System Open .

RedCARE and Dual*Com* cannot transmit sequential zone information to the central station at present unlike Comfort which uses Contact ID sequential reporting. To improve upon this Comfort s Alarm Filtering may be used to differentiate between a single zone activation and multiple zone activation.

With Comfort, when two different zones which are programmed as alert zone types are triggered within 10 minutes, an intruder alarm is produced. So by setting internal zones as Alert Types such that when more than one Alert Zone is triggered within 10 minutes an Intruder

Alarm is produced, this can be treated as an ALARM CONFIRMATION signal or SECOND ALARM.

e.g. To transmit A CONFIRMED ALARM signal using REDCARE or Dual*Com* set up the alert alarm type and response to trigger an output and connect it to trigger a Channel 3 (intruder) on the STU and the intruder Alarm type can be used to trigger a Channel 7 (Confirmed Alarm). Please refer to above italics for notes on restoring these outputs on disarm.

Refer to NACOSS Codes of Practice NACP 14 for design guidance on the use of ALARM CONFIRMATION systems.

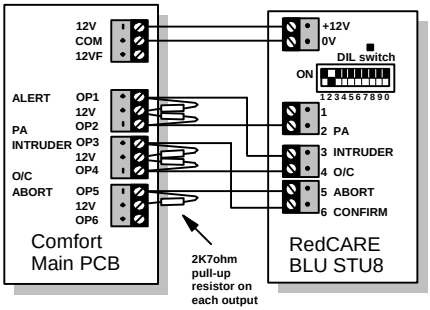


Figure 2.16 - Confirmed Alarms using a STU

Note: BLU STU 8-Channel

Each output must have a 2K7 pull-up resistor connected between +12V and the output otherwise the STU will NOT send any signals.

The alert zone type is capable of sending a silent signal via Contact ID using Comfort s dialler and can switch an output to a STU, you may wish to modify the alert alarm type to be audible in this instance.

Default = Outputs 1- 8 are set-up already in the default responses.

Output No.	Apply to Alarm Types	Alarm	Response
1	12	Fire	1
2	9 & 2	Panic / Duress	3
3	(1,11,22) or 6	Intruder or Alert	5
4	19	System Set	7
5	20	Abort	9
6	1	Intruder as Confirmed	11
1-6	Sec. Off Mode or System Unset	Restore outputs 1-6 when system unset	77

The response for restoring outputs 1-6 can be written as follows:

74,2,74,4,74,6,74,8,74,10,74,12,255 and requires 3 lines. Once written insert the response number into Response 77 preceded by action code 74.

To provide Local Audible Line Fault monitoring the RedCARE STU **MUST** use the same telephone line as Comfort panel and should be connected to the incoming line and NOT the outgoing line otherwise you may suffer Line Faults on the RedCARE.

Dual*Com* Connections

Dual*Com* is connected slightly differently. For Local Audible Line Fault monitoring, the telephone line MUST NOT share with the Comfort line in any way, rather it must have it s own telephone line connection. Alternatively, Dual*Com* may be run in radio-alone mode and secondary path signalling may be provided by Comfort using the Contact ID format (13). The line-fault relay from the stand-alone comms. device must be connected to a Comfort zone programmed with a zone type 28 and named Zone # Phone Tamper . This relay should open during a line fault. This may also provide a line fault dial-out from the Comfort communicator to a central station or user phones as usual, provided Comforts telephone line is still operational. It is possible for the system to be armed with this zone type active by bypassing the line fault zone using the bypass menu.

Reporting Comfort Line Fault

If you need to monitor Comfort s telephone line via Paknet or RedCARE, switch an output using a response in alarm type 3 (line cut) and connect it to an input channel of a stand-alone programmed for a negative applied signal or via a 12v relay to reverse the polarity. Obviously for this to be effective or even useful, the second comms. unit must be on a separate and intact telephone line and the Paknet radio-link must be fully operational at the time of the activation. *Ensure that the standalone comms. unit DC supply is taken from Comfort s auxiliary supply or is at least referenced to 0V ground.*

Remote Reset - RedCARE /Dual*Com*

In addition to using the Engineer *command to reset the system from an external telephone, Comfort can be remotely reset by a central station using the any external means capable of switching a relay such as used by RedCARE Tellback or Dual*Com* control relay. A volts-free relay contact is connected to a Comfort zone input and programmed as an idle switch zone type (Type 8, 9 or 24) It s ON Response must contain action code 25 (Do Engineer Reset). The relay must change state or pulse for at least 300ms.

Measuring System ‘Quiescent ‘ Current

The battery must remain in circuit when taking this reading and all detection devices, Keypads, Door Phones and other devices requiring power MUST be powered by the system while in Security Off Mode and free from wiring faults.

This is measured by placing a digital meter set to current range of 2 Amps or more in series with the Red back-up battery lead using insulated crocodile clips. Now, remove the mains supply to the panel for a few seconds and note the meter reading. if it is 850mA or above then an additional power supply should be fitted.

Resettable Fuses (PTC)

The auxiliary and battery supplies are protected by two positive temperature coefficient resettable fuses of 1A and 2.5A respectively. If either rated maximum current is exceeded then the DC supply will be interrupted until the fault is removed. This type of protection is slower acting than a conventional fuse taking between 0 and 30 seconds to act depending on the severity of the overload. The voltage is restored once the fault is removed and the fuses cool down, which can take a few seconds.

X10 Connection (MJ3)

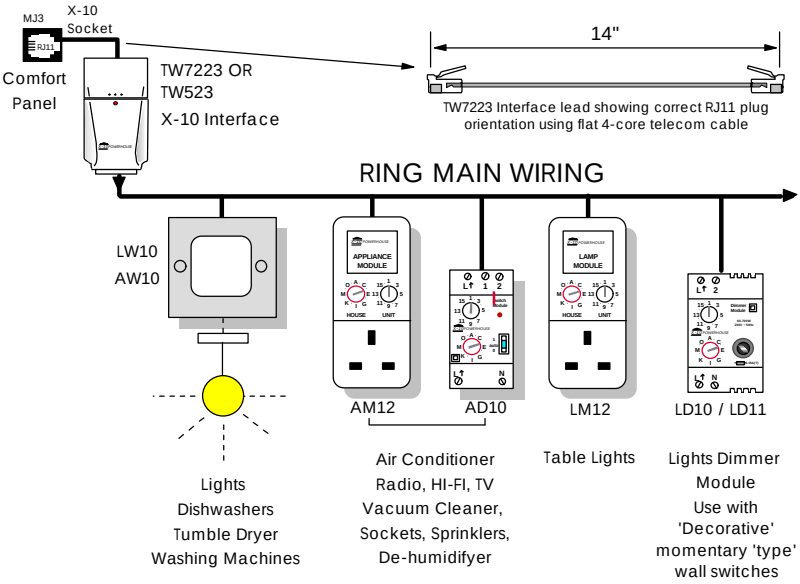


Figure 2.19 - X10 Connection

The TW7223(230v) and TW523(110v) X-10 interface receives signals from Comfort and converts the code into commands which can be sent along the AC mains wiring to X-10 compatible devices around the property. It is connected via a 4 way telephone cord to the MJ3 socket and fits above the transformer and connects across the live and neutral on the transformer side of the mains terminal block. A one-to-one 4 way telephone wire should be used to connect the X10 interface to the MJ3 RJ11 jack on the Comfort panel. Once power is applied the red LED on the interface should light. Whenever an X-10 command is sent from Comfort, the red LED will go off briefly except for DIM/Bright commands. This can be a good indication when tracing for the cause of a problem.

X-10 commands are included in Comfort s Response Library

This unit will only operate X10 Modules on the same Phase as the X10 Interface, unless an X10 FD10 Filter / Block / Phase Coupler is used.

Bright and Dim Commands are now supported within Comfort . However, you may also use the radio remote control UR24 and TM12U Transceiver module (contains TW7223) to dim and brighten X-10 lamp modules (LM12) and DIN rail dimmer

module (LD11) as well as the Wall Switch (LW10) which may also be used in a Comfort system setup.

Mains Supply

It is always advisable to check a property for the ability to transmit X-10 signals reliably around the electrical ring-main using the UR24/TM12U before specifying the use of X-10. Some buildings with noisy mains supplies or appliances can produce a masking effect to X-10 signals, also X-10 signals can attenuate over distance. Generally, it is better to make sure that your Comfort CPU is supplied by the same consumer unit/ring-main and same-phase which your X-10 modules are working on although you can use X-10 on 3-phase installations with phase couplers to take X-10 signals across from one phase to the next using two FD10 modules.

The TW7223 X10 interface must be connected within the Comfort Panel, the TW523 is connected outside. European Panels have a suitable position for mounting the TW7223 interface above the mains transformer as shown below.

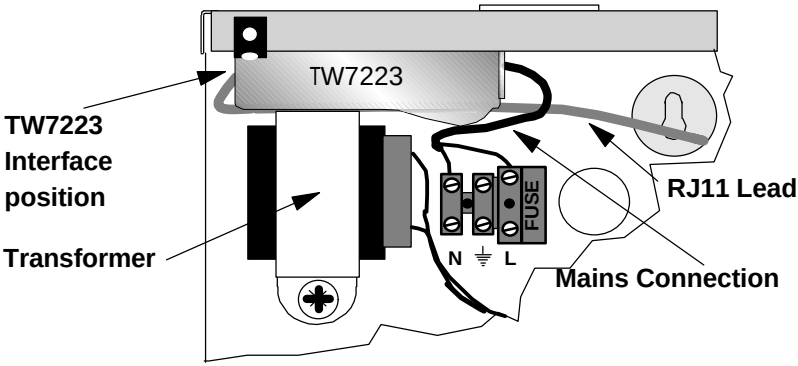


Figure 2.17 - TW7223 X10- Interface Positioning

Connection to Local Expansion Modules

There are two types of Local Expansion Modules:

8-zone with 8 outputs - Model LEM01

16-zone without outputs - Model LEM03 **(Cannot be used with SEP02)**

The Local expansion modules are connected locally to the Comfort main panel or Remote Expansion Panels via a short 10-way ribbon cable to socket J5**.** The board is mounted within the main panel using the four fixing posts and screws provided. To enable the 16-zone board, ensure that Location 40 (Table 35) is set to a value of 32 or 36 if RGR02 is fitted and then complete the usual zone programming method as with

the main zones on the panel. if using CS-Xpress this location is **not set** automatically. The 12V outputs, however, should only be used to drive up to a 100mA load. Each output may also be used for infrared signalling.

Power-On Checklist

1. Check that Keypads and Door Station wiring are connected, the ID jumpers for each Keypad and Door Station are set correctly. At least 1 Keypad should be connected for easy programming
2. Measure and log the functional resistance of each detection circuit
3. Terminate all zone wiring into the respective Zone Terminal Blocks on the Main board or Local Expansion Module (LEM) and label accordingly. Connect detector 12V supplies to the auxiliary 12V output terminal block.
4. Check all zone jumpers are in the double EOL (away from terminal blocks) or no EOL positions (nearest the terminal blocks).
5. If U4 has been previously programmed off site, then check that the correct (Non volatile Memory) NVM is inserted the right way round in the socket marked U4.
6. Apply mains power without the battery. Observe the red and Green LEDs on the main board while the system is going through its self-testing cycle. Both LEDs should turn on when power is first applied. After a second, the red led should turn off. After around 5 seconds, the green led which was on should go off for a second and turn on again. This indicates that the Voice system and the U4 NVM has been checked and is the correct version. If things go wrong here, refer to the section on Troubleshooting
7. The Keypads should announce Security Off .
8. Enter *1234# on each Keypad. The User Voice Menu should be heard. End by pressing the F (Function) key, and go on to the next Keypad.
9. If there is a Door Station, press the Doorbell button. The doorbell chime should be heard on the Keypads. Press any key on any Keypad and Press 1 for Door Station to talk to the Door Station. Only the Keypad or Door Station can talk at any one time, with the Keypad controlling the direction of the conversation. Press 1 to alternate between listen and talk.
10. Press the Night Mode one-touch key (with the Moon Icon) on any Keypad. After a few seconds the Keypads should announce Night Mode . The Red LED should come on and the Green LED go off on the Keypad.
11. Exit from the Keypad menu by pressing F. Test the local phone operation by lifting the handset or press Handsfree button, press * within 5 seconds, followed by user code 1234 then #. You should hear the Voice Menu. Press some keys to go into various menus to verify that the local phone access is working. If you cannot get into the Voice Menu, see the Troubleshooting Section.
12. The system is ready for programming, either using CS-Xpress for Windows 95/98 or by Keypad. If you cannot get to this point, refer to the section on Troubleshooting for ideas on what may have gone wrong.

Comfort Security System

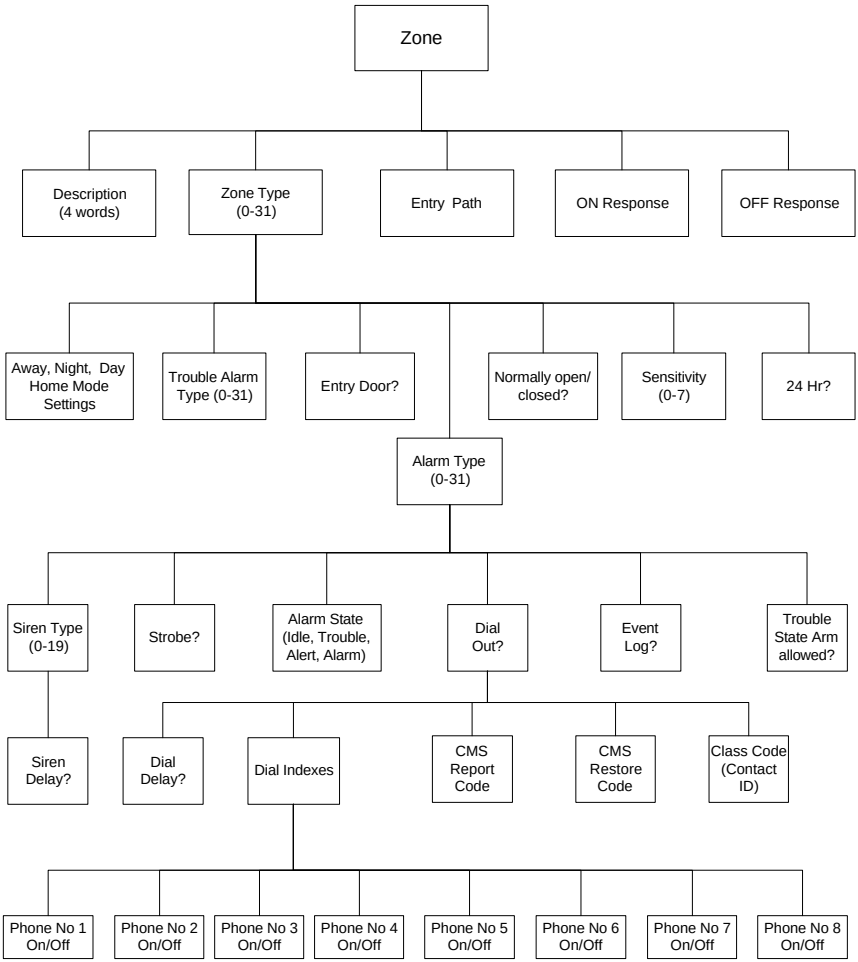


Figure 3.1 - Zones, Zone Types, Alarm Types, Siren Types

The above table shows the key relationship between **Zones, Zone Types, Alarm Types and Siren Types**. Each **Zone** has settings for Description, Entry Path, Responses, and also belongs to a **Zone Type,** which determines the basic behaviour of the zone, like whether it is Normally Open or Normally Closed, if it is a 24 hour zone, if it is an Entry Door etc., and its Alarm Type. The **Alarm Type** determines the

actions taken by the system during alarm activation, like whether it dials out, and if so to which numbers, whether the siren and strobe is turned on etc. The **Siren Type** determines the pattern and duration of the sound.

This highly configurable system allows great flexibility in programming a system, but it also simplifies programming because of default settings. Programming consists of assigning words and Zone Types to each zone. Zone Types , Alarm Types and Siren Types have defaults which do not need to be changed unless there are special requirements.

Home Automation - Responses and Actions

Responses perform the Home Automation functions in the system. A Response consists of Actions, each of which performs a specific function, like turning an output on or off, sending an X10 command or an Infrared code to a certain output, or arming and disarming the security system. Hence a Response can perform a series of actions or functions. Responses may be assigned to Zone activation and deactivation, Time Programs, Holiday Programs, Alarm types, Home Control Keys Settings, Security Mode changes, and Keypad Function keys. The system has 255 Responses. Most Responses have default Actions assigned to them, but all Responses may be redefined through the Engineer voice menu. See the list of Default Responses in the Worksheet.

Comfort has a comprehensive list of Actions which may be used for programming. Refer to the booklet "Programming with Action Codes", for the actions and their descriptions. There are actions for turning outputs on and off, or pulsing outputs, sending Infrared codes from any output, sending X10 codes, starting Timers, arming and disarming the security system, bypassing zones, activating sirens, etc.

Zone-Activated Responses

Each zone can start a Response when it goes ON (activated), and another Response when it goes off (deactivated). These Responses may be used to turn on and off lights and appliances, cause announcements or do other functions as required.

Alarm-Activated Responses

Each Alarm Type can start a Response when the alarm is activated. These Responses may be used to perform supplementary functions in the event of alarm activation.

Time Programs

There are 16 Time Programs which to enable functions to be activated automatically at programmed times.

Each Time program consists of an Activation Time, days of the week for activation, and a Response. A Time program can be specified for any combination of days of the week (Monday to Sunday) as well as Holidays. A Time program is activated if the current day of week is

selected and the time matches the programmed time (to the minute). When this happens, the programmed Response is activated.

For example, in an office, Time Program 1 may be programmed for 9:00 am on Monday, Tuesday, Wednesday, Thursday, Friday to activate a Response which disarms the security system and turns on the lights, air-conditioning and photocopying machine. Time Program 2 may be programmed for 7 PM on the same days to arm the system to Away mode and turn off the lights, photocopying machine and air-conditioning. However, on Holidays, Time Program 1 should not take place. The Response for Time Program 1 should check that the day is not a holiday, and if it is, to exit without performing the other actions. Up to 24 Holidays in a year can be defined to handle situations like this.

Time Programs can also handle automatic Daylight Savings Time Adjustments.

Holiday Programs

The system has the ability to control lights and home appliances at semi-random times during the day or night in Holiday Mode. This is made possible by Holiday Programs. There are 8 Holiday programs available.

Each Holiday Program consists of a Start Time in hours (0-23), a Duration in hours (0-23) , an ON Response, and an OFF Response.

The Start Time is when the ON Response is activated. Only the Start Hour (0 to 23) is specified in the Holiday program. The actual time within the hour is generated randomly by the system, and is different for each day that it is activated. The duration is specified in hours in the Holiday Program, but the actual duration minutes is also generated randomly, and is different each time that the Holiday program is activated. At the end of the Duration, the OFF Response is activated.

For example, Holiday Program 1 is programmed for Start Time of 7 PM, a duration of 1 hour, ON Response to turn on a light, and OFF Response to turn off the light. Each day, the light will turn on between 7 PM and 8 PM, for a duration of 1 hour to 1 hour 59 minutes. With this randomised pattern, it will not appear to be a programmed or automatic operation. All Holiday Programs can run simultaneously and overlap in time.

Security Mode Responses

When the system changes from one of the Security Modes (Security off, Away, Night, Holiday) to another, a Response may be activated. When the system is armed to Away, Night or Holiday Mode, lights and appliances may be turned off. For Security Off Mode, heating or air-conditioning may be turned on or set to a comfortable temperature. The default setting makes use of macro responses inserted to allow multiple responses to occur at the same time using action code 74 (Do response).

Strobe Arming 'Flash' (Macro Response 28)

The system default setting uses the Away Mode as a means of triggering the strobe light for 3 seconds (Response 118 within Away Macro response 28) to signify successful arming.

Siren Arming 'Pulse'

The system default setting Siren Type 5, Table 25,Away Armed) will also will produce two siren pulses upon successful arming of the system to Away Modes. If this is not required simply subtract 4 (Siren) from the Siren total value in Location 461 entering 102 instead of 106.

Home Control Menu

The Home Control Voice Menu is used to control home appliances as well as perform other home automation and security functions. There are 11 categories or groups of operations corresponding to the buttons on the telephone keypad (0 to 9 and *). Each category or group (called Control Key) has 11 Actions in its sub-menu, for example ON, OFF, LOUD, SOFT, UP, DOWN, BYPASS, UNBYPASS). Hence there are a maximum of 121 operations which can be performed on the Home Control Menu.

Each Control Key consists of a Description which is made up of up to 4 words from the Wordlist. and up to 11 Action Keys (0 to *).

Each Action key for a Control Key is made of a description of up to 3 words which describes the Action (e.g. ON, OFF, Channel 1, Channel 2, High, Low), and a Response. It is the Response which performs the function for the Control Menu. Hence any item in the Home Control Menu can perform any function depending on the Response, not only for Home control. Control Keys may be used for:

- Direct Control of Home appliances via X10, Relays or Infrared signals
- Activating Scenes which program a combination of lighting, music and mood for various occasions, like Party, Sleep, Work, Movie, etc..

If a current sensor or ac relay is used to provide feedback status to one of the inputs, the voice menu can announce the state of the appliance (on or off) .

Keypad Responses

Each key on the Keypad when prefixed by the F key can activate a Response. Thus, each key can be programmed to many functions inc:

- Shortcut to frequently used Menus
- Activate Intercom Function to other Keypads
- Turn on another Keypad microphone as a Baby Monitor
- Activate home appliances or combinations of appliances
- Arm to any mode
- Trigger sirens and other alarm outputs
- Play Reminder Messages
- Simultaneous press of Away and F key (Panic), Night and F key (Fire).

CS-Xpress PC Software / UCM01 Interface Installation

Windows 95/98/2k Installation

1 - Insert CD ROM into Drive

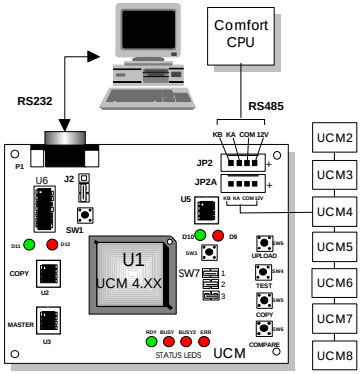
A screen with icons will appear.

2 - Click on Setup, click next, next,

when prompted.

3 - Then check the tickbox:

Yes, Launch the program file, then ok.



CS-Xpress 3 is installed within Program Files folder.

The program will be installed on your hard disc with an icon in the program manager of your choice. The program will run from the CS-Xpress.exe icon. Ensure that you close down any resident fax software that may be present on your computer. A customers system configuration is stored as a .csx file type. The system configuration is stored within U4 I.C. on the main CPU. Never remove or replace this I.C. without first powering the system down. A default configuration may be found in the CS-Xpress Folder using file / open default.csx.

Connecting your PC to the Model UCM01 Interface

1. Connect the interface to your PC comm. port using a serial data cable. Link the interface to the Comfort control panel by connecting KA to KA and KB to KB. A connection is also required to Comfort s 12 volt DC supply. The Interface Green and Red LED s D10 and D9 should now 'flicker. Start CS-Xpress and select Configuration. Select the correct comms port for your PC. You can make-up your own lead for this using the Termination kit UCM-TERM. The UCM may be installed up to 200 metres away using Belden twisted pair cable.

2. To upload your new configuration into Comfort, select Transfer, PC - > System, select a catergory to download from the left hand menu or 'Do All' from the middle of the screen, enter the User 1 Login-Code (def: 1234) followed by send, then click the Green CSX Console icon on the bottom bar and view the data being exchanged. This is also useful for showing any problems with the download. The interface Red and Green LED s D11 and D12 will flash as data is being sent. The download has finished when the screen shows Transfer Complete on the bottom.

3. Now press Comforts reset button on the main PCB, this will cause the settings to take effect, the system will re-start and jump to the last mode it was in. Engineer access will be disabled (Press F0 to re-enable).

Troubleshooting CS-Xpress

Symptom	Possible Cause
LED s D9 and D10 are not flashing	No power to the UCM or Location 1672 set to '0'.
Timed Out Waiting for Reply	This can indicate that the comms port on the PC is set incorrectly or the RS232 cable is not connected or the wrong type.
Too Many Checksum Errors	This could be caused by an incorrect upgrade routine from an older version of CSXpress. De-install the old version and do a fresh install.
Only D10 Green Led is flashing	KA-KB connection is reversed.

You can get the latest version of CS-Xpress3 from the Technical Area of the web site: www.comfort.org.uk/technical/index_beta.html

Remote Signalling Requirements for Police Response (UK)

Comfort systems which are requiring a Police response will require setting to comply with certain regulations. The Central Station signalling can either make use of Comfort s built-in Digital Communicator or can use the outputs to trigger a stand alone communicator such as a RedCARE STU Dual*Com* or even both. If the onboard digital communicator is used, Telephone numbers 1 and 2 should be used for dialling the Central Station (ARC). **Ensure that a (contact ID) zone list is sent to the ARC along with the desired response to be taken for each alarm type. Zones such as exit terminators and other non-signalling zones should not be sent. We have produced a form for this purpose in the program worksheet manual**.

Engineer Reset

Action Code 20 initiates an Engineer Reset requirement and can be applied within any existing Alarm Type Response or as it s own Response 83 within the desired Alarm Type or within Intruder Macro Response 25. The Alarm Company can decide what type of alarm Condition will require an Engineer reset after activation, such as Intruder Alarm (1), Tamper (11), Bell Tamper (22) or Panic (12) etc. When a user tries to arm the system after such an event has occurred, they will hear invalid, please call engineer for reset .

Remote Reset of the system

Whenever the system requires an engineer reset, all the installer need do is sign-in with the engineer code and while in Menu 1 press the star key*, you will hear Engineer Reset . This can be done locally or remotely by dialling-in from any tone telephone.

When the reset is required, Comfort automatically enables Engineer access so that the Engineer may sign-in without the user needing to authorise the access. Additionally, the engineer may be called by the system if the user presses the function 0 command and Alarm Type 30 has been programmed by the Engineer with Telephone number 8 prior.

Exit Terminator / Door Station Button

The doorbell may also be used as a push-to set switch to truncate the exit timer during arming of the system to Away or Holiday Modes. To enable this function select Exit Termination check flag in CS-Xpress under General Configuration or set Location 1692 to a value of 2. If an external Door Station is not required or if more than one means of exit termination are required (e.g. radio remote switch), a zone may be assigned as the exit terminator. This circuit has a dual function of a doorbell action and a final setting switch. Operation of this zone type during the exit procedure will truncate the exit timer provided that all other protected zones are clear. Operation of this circuit during Away Modes will cause a dial-out if programmed within alarm type 25 to do so. Operation while the system is unset will cause the Keypads to sound and the home phones to ring *(if ringer unit is installed*).

Note: **Response 67 MUST be entered as the zone ON response for the above functionality**.

Bell Delay (Siren Delay)

Some systems may be required to have a bell delay stipulated by the Police authorities. If this is the case Comfort can accommodate this by setting the Bell Delay in minutes into location 51 and set the siren delay flag within the relevant the alarm types such as Intruder or Duress using Engineer Menu 2 option 5 or CS-Xpress Alarm Types .

Abort / Open and Close Signalling

Comfort systems may be programmed to send an abort signal to the central station should the alarm be disarmed within 90 seconds of an alarm activation and/ or signal that the system has just been armed or disarmed. Abort(20) and System Set(19) and System Open(17) are alarm types found in the alarm types in Engineer Menu 2. To enable reporting simply set each one to dial-out to telephone numbers 1 and 2, and refer to table 18. The signalling protocol used should be Contact ID. Alternatively, outputs may be used to trigger an open and close signal via a RedCARE STU or Dual*Com* transmitter.

See previous Section entitled Connection to RedCARE or Dual*Com*

Program and Engineer Menus

There are 2 levels of programming access,

1 Program Menu - allows a master user to change settings pertaining to the answering machine, home automation and certain security features. Program Menu is accessible from the user Master Code (User Menu 9) as well as Engineer Menu 9. This is described in detail in the Program Menu Reference (User Reference Manual)

2 Engineer Menu - Allows change in security, zone, home automation and alarm settings. This is described in detail in the Engineer Voice Menu Reference. Engineer Access is enabled by setting the Engineer Sign-in Option ON in the User Program Menu (3 - Security Settings, 4 - Engineer Sign-in option*)*. If this setting is OFF, the Engineer code will not be allowed to gain access to the Engineer Menu. This is automatically disabled each day at midnight and when the system is armed, as a safety precaution.

Programming Modes can be accessed from the Keypad, any house phone, or remotely, by dialling from any tone-dialling telephone. CS-Xpress for Windows 95/98 is also available to do programming from a PC.

Entering Engineer Menu

If no Engineer Code has been programmed, the default code is 6789#. The Engineer Sign-in Option must be enabled on the Program Menu in order to gain access using the Engineer Code.

To enable Engineer Code,

- Enter the Program Menu, press 3 for Security Options, 4 for Engineer Sign-in Option and 1 to set it to ON
- Alternatively, on the Keypad, press F+ 0 which is default-programmed to enable Engineer Sign-in Option. This key can be programmed to dial to one of the programmed phones, i.e. the Engineers telephone number, to allow remote programming. This is done by enabling the dialout option in Alarm Type 30, and turning on the required phone index 1 to 8

The Engineer Sign-in Option is OFF by default, and is turned off when System is Reset (pressing Reset button, not rearm), and is automatically disabled each day at midnight, and also when the system is armed This option gives the user assurance that installers cannot access their system without their authorisation.

To enter Engineer Programming mode, either

- Use any Keypad or house phone and enter * (Engineer Code) #, or
- Dial the phone number where the system is installed. When the system answers the call and plays the Greeting message, enter * (Engineer Code) #. This is possible provided the phone is not answered by anyone on the premises.

When the correct code has been entered, the system enters the Engineer Menu.

To Select a sub-menu or option from the voice menu, enter a number on the telephone keypad as instructed (digits 0-9,*,#). It is not necessary to wait until the voice menu is completed before entering the digit to select a sub-menu or option.

How to use the Voice Menus

The general sequence of the voice menus (User, Program, Engineer) is:

1 The Voice Menu gives the options or sub-menus which can be selected.

2 The system waits for entry of a number key from the keypad. If no number key is pressed within a time limit, the menu is replayed. If no keys are pressed for some time, the system exits this mode and returns the phone to normal operation or turns off the Keypad.

3 When the number key is pressed either (a) the selected menu item is activated, (b) a new sub-menu is selected with a new voice menu or (c) the system requests the entry of a number to change an existing setting. In the case of (c), when a new number is to be entered, the system will say the current value of the parameter, and ask for a new number and # key. After the number is entered followed by the # key, the new value entered will be announced as confirmation. If the current value is not to be changed, just enter #. The previous voice menu will be played. Entering * clears the digits entered, for example 1234*5678# will enter 5678.

When using the telephone, to avoid mistakes when entering numbers during programming, press * before the number. This stops the voice menu and clears any numbers entered. If the voice menu is talking, make sure that it stops when the key is pressed. This is useful if you do not wait for the menu to finish before keying in the new number.

4 At any voice menu, entering just # alone will return to the previous menu.

5 Pressing F on the active Keypad ends the menu.

6 If an invalid digit is entered in response to a voice menu, the menu will be repeated. Hence to repeat a menu (if you do not want to wait a while) , just press an invalid digit; usually 0 or 9 will do.

7 When asking for input, the voice menu will say "Press .. for.." or "Enter new ... number (or code) and # key". In the first case, you only press a number key **without** the # key, to make a selection from among the options given. In the second case, more than 1 digit is pressed, followed by the # key, to enter a number.

8 When pressing keys on the telephone, **press firmly and release normally without keeping your finger on the button**. When entering a number and hex key during programming, all keys pressed will be confirmed by a short beep tone.

Using the Program Worksheet

In this section, we will work through the Worksheet, and show how to program each item. Keep a copy of the program Worksheet handy.

The system is programmed either via Engineer Menu, or by Locations. To Enter Engineer Menu, enter the Engineer Code (default *6789#). The Notation X,Y,... used in this section indicates the Menu path, i.e. what keys to press to get to the required sub-menu. For example, 7,4,1 means press 7 for System Settings from the main, or top level Engineer menu, 4 for Star Settings from the System Settings sub-menu, and 1 for Locations from the Star menu. Most programming settings are available on one of the Engineer sub-menus. Refer to the Engineer Menu Reference for a full description of the menu required. However, there are many settings which are not accessible by sub-menus, but can be programmed in the Location Menu (7,4,1). Enter the Location given in the worksheet followed by the # key. The system announces the Location entered, and the value of the code at the locations, for example,

> **Location 1675, Code 1**
> **Enter New Code and # key**

To change the code at the location, enter 0 to 255 and the # key. To correct a wrong entry, press * and the new data, and # key. The system will announce the new value entered.

Number of Keypads and Door Stations

The number of Keypads and Door Stations (max 1) in the system are in Location 1675 and 1674 respectively. Their IDs are set according to the switch settings given in the respective installation manuals. The IDs of Keypads must be consecutive, i.e. starting with 1, with no missing IDs in between. The panel must be reset by pressing the RESET button to make this setting effective.

System Control Number

Engineer Menu 7,4,3 gives the System Control Number, or firmware version.

Table 1 - System Settings

Pulse Dial (7,1) is set to On if the telephone exchange in your area accepts only Pulse, or decadic dialling. Modern exchanges should be using Tone or DTMF dialling, in which case leave it as default OFF

PABX Setting (7,2) should be ON only if the incoming telephone line to system is to be connected as an extension of a PABX.

Table 2 - Status Indicator Output Assignments

This table gives the Locations in outputs (1 to 16) can be assigned to indicate the system conditions, shown. Enter the Output number in the locations given. For example, to indicate Phone Line Cut on output 4, Program Location 1695 with 4.

Table 3 - Away Arming Method (Location 1692)

Comfort has 3 methods of arming to Away Mode, i.e. when no one is in the premises. In Final Door Arming, the exit delay is terminated and the system armed when the user exits via the designated Entry Door (Zone Type 2). In Arm after Exit Delay, the system is armed when the Exit time expires and all protected zones are closed. This is used when an Entry Door contact is not available. Exit Terminator is used for the UK, and arms only when an Exit Terminator button is pressed during exit.

Table 4 - Zone Settings (Engineer Menu 1)

This is the key item to be programmed. In security only installations, this may be the only programming needed, other than phone numbers for dial out.

For each zone in the system, enter the selected zone number and # key. The system announces the programmed zone settings. Select the sub-menus to program the following:

- 1 - Description, up to 4 words from the Wordlist. If less than 4 words are needed, enter 255# to terminate. If no description is entered for a zone, the Zone number is used as the default description
- 2 - The Zone Type, which defines the type of detector or input. This is the only mandatory setting for a zone. Unused zones are set to Zone Type 0
- 3 - The Entry path setting (on/off). A zone on the Entry path does not cause an alarm when it is triggered after the Entry Door is opened when the system is armed.
- 5 - The On Response (the optional Response or program which is activated when the Zone goes on). ON means open for a normally closed zone type and closed for a normally open zone type.
- 6 - The Off Response (the optional Response or program which is activated when the Zone goes off). OFF means closed for a normally closed zone type and open for a normally open zone type.

Zone Types

There are 32 Zone Types available in the system. Zone Types define the characteristics of the Zone, what type of zone it is, how it is activated and in which security mode it is active, and what alarm it triggers if it is activated when it is active. Zone Types make it easy to program the system.

The 3 Zone Types tables show the default settings and how to change them using Locations. It is rarely necessary to change default Zone Types settings, unless there is a special requirement which is not catered for by the default values. It is necessary to Reset the panel

after changing Zone Types, by pressing the reset button on the Comfort PCB. Press the Reset button after all changes are completed, rather than after each change.

Characteristic	Value	Remarks
Away Mode	Instant, Alert, Perimeter, Inactive	Each zone type has a setting in each mode: Off, Night, Day and Away. This gives flexibility in defining the behaviour of the zone types. For example, a Zone Type may be Inactive in Off or Day Modes, Alert in Night Mode and Instant in Away Mode. See Flowchart for Instant, Alert and Perimeter Zone Activation (figure 3.2)
Night Mode		
Day Mode		
Sec. Off Mode		
Trouble Alarm Type	0 to 31	Alarm Type which is activated when a trouble condition occurs on the zone i.e. open or short circuit when the system is armed (Night, Away or Day Mode). In Security Off Mode, a trouble condition always results in a Trouble alarm type.
Alarm Type	0 to 31	Alarm Type which is activated when a non-inactive zone is tripped.
Entry Door	Yes/No	Determines if the zone type is an Entry Door, i.e. used for entry and exit for the premises. Closing an Entry door ends the exit sequence during arming, and opening the entry door starts the entry sequence when the system is armed for Final Door Away Arm.
Normally Open/Closed	NO or NC	Defines the behaviour of the sensor contacts to the zone. Most Security sensors are Normally Closed.
Sensitivity	20 ms to 850 ms	The Sensitivity setting determines how long a zone has to be activated before it is considered a genuine trip. A higher setting prevents false alarms, while a lower setting allows for detection of short action sensors like vibration sensors.
24-hour	Yes/No	A 24 hour zone is always active irrespective of the Off, Away, Night, Day settings. The Instant, Alert, Perimeter and Inactive settings do not apply if a Zone is defined as 24-hour. 24 hour zones cannot be bypassed. A zone type can be Instant in all 4 modes, but still have the 24 hour setting OFF to allow bypassing

Table 8 - Zone Types - Security Mode Assignments

Each Zone Type is defined as Inactive, Alert, Perimeter, or Instant for each of the Security Modes (Security off, Away, Night, Day). The Zone Types (Security Mode Settings) table gives the default assignments for each Security Mode and how to change them using Locations.

Instant/Alert/Perimeter Zoning for False Alarm Filtering

The system has an advanced mechanism to help filter false alarms. Each Zone Type has one of 4 zone activation modes - Inactive, Instant, Alert and Perimeter. An Inactive Zone setting does not cause any alarm when tripped. An Instant Zone activates its assigned Alarm Type when it is tripped. An Alert Zone causes the system to go into Alert State when tripped. If another non-Inactive zone is tripped (but not the same zone) within the next 10 minutes, an Intruder Alarm is activated. A Perimeter Zone causes the system to also go into Alert State. Tripping of an Alert or Instant zone, but not another Perimeter zone within the next 10 minutes will cause an Intruder Alarm to be activated. Each zone

type can be assigned to any one of these filter settings for each security mode (Security Off, Night, and Away/Holiday). The use of Alert and Perimeter Zones is a useful tool in preventing false alarms, but requires careful planning and design on the part of the installer. Refer to the table below for the flowchart which explains the sequence of zone activation to trigger an alarm.

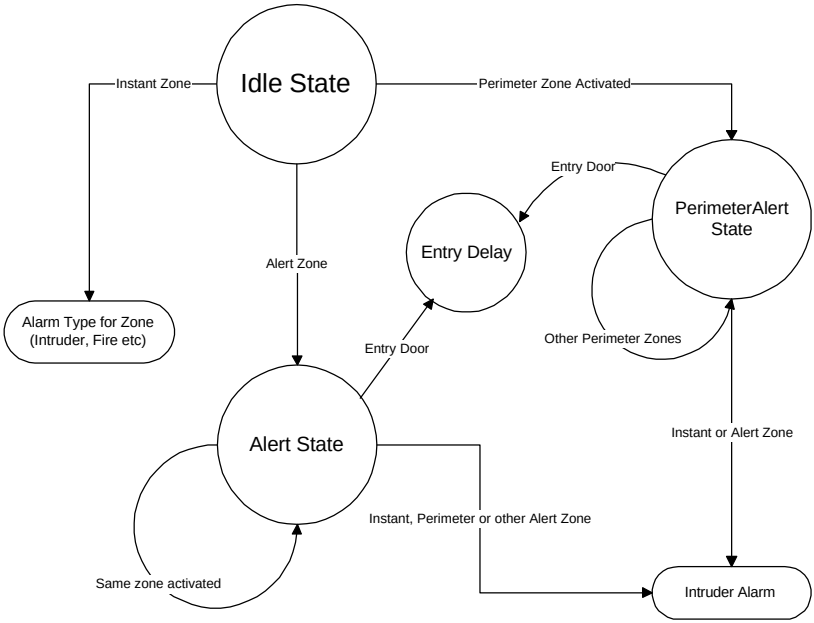


Figure 3.2 - Flowchart for Instant, Alert and Perimeter Zone Activation

Table 9 - Zone Types (Alarm Type Assignments)

Each Zone Type is assigned to 2 Alarm Types. The Normal Alarm type is the Alarm which is triggered when the zone is activated when it is not Inactive (i.e. it is Instant, Alert, or Perimeter). The Armed Trouble Alarm Type is the Alarm which is triggered when the Zone is in Trouble state, i.e. open or short circuit wiring (2 End of line resistors must be used), AND the system is armed (Day, Night or Away mode). For example, Zone Type 1 which is defined as Instant in Away, Night, and Day modes, will trigger the Intruder Alarm when armed. When armed and Zone trouble is detected, it will also cause an Intruder alarm because of the Armed Trouble setting. Zone Trouble detected when the system is not armed (i.e. in Security Off Mode) always causes a Zone Trouble alarm (Alarm Type 5) The table shows the default Alarm type settings for each Zone Type and how to change these settings using Locations.

Table 10 - Zone Types - Miscellaneous Settings

An Entry door zone type starts an entry delay if the door is open when the system is armed. In the Final Door arming method, it also terminates the exit time when it is closed during arming to Away mode.

Each Zone Type can be defined as Normally open or closed. Most security sensors are Normally closed. Normally Open and Closed contacts cannot share the same zone.

The sensitivity of the zone (i.e. the minimum time which the sensor needs to be tripped before considering it a valid activation) is defined by the Zone Type. The sensitivity setting is coded from 1 to 7 as in Table 11.

For UL installations, zone sensitivity should be set at 500 ms. minimum

Selecting a Zone Type

To select the zone type for the zone enter * Engineer Code then #. You will hear Engineer Menu . Press 1 for zone settings , select your Zone number followed by #. Press 2, you will hear the current zone type for that zone,. Enter the zone type number required from the following list of zone types.

The term Instant zone type is sometimes referred to as an immediate, burglar, night or intruder zone by other panel manufacturers.

0 Not Used

A totally disabled circuit for Alarm triggering. It cannot be used to activate responses

1 - Instant Day/Night/Away (NC, Intruder Alarm)

A circuit that will generate a full alarm during Day, Night and Away Modes and not Security Off Mode. It is intended for PIRs in zones which are required to be armed during Day Mode foremost.

2 - Entry Door (NC, Entry Alert)

This type of circuit must be the first detector triggered when entering the protected area whilst the system is set. Once set, activation of the circuit will start the entry timer. The function of this circuit is determined by the type of Away Arming Method selected. If Final Door arming is programmed, then the system will not complete arming until the door is closed on the way out and all other protected circuits are clear.

3 - Alert Night/Away (NC, Alert)

A circuit that can be used to dial-out silently if activated during Night, Away Modes generating an Alert Alarm type 6 . A full alarm will be generated only when another alert zone, perimeter or immediate zone is activated within the next 10 minutes. .

4 - Alert Away (NC, Alert)

This circuit is the same as zone type 3 except it is not active during Night and Day Mode .

5 - Instant Night/Away (NC, Intruder Alarm)

A circuit that will generate a full alarm during Night and Away Modes and not Day Mode. It is intended for PIRs in interior zones

6 - Alert Vibration Night/Away (NC, Alert Alarm)

This circuit is the same as zone type 3 except it has an operating sensitivity of 50ms and is suitable for use with non-electronic (mechanical) inertia shock detectors. A zone response may be needed to act as an analyser.

7 - Instant Vibration Armed (NC, Intruder Alarm)

A circuit that has an operating sensitivity of 50ms which is suitable for use with non-electronic (mechanical) inertia shock detectors and will generate a full alarm in only Night and Away Modes.

8 - Switch (N.O. Null Alarm)

A normally open circuit which will not activate an alarm but can be used to activate a response at all times. Responses may be applied to action of closing, opening or both. The circuit operating sensitivity is 200ms and is suitable for use with detectors with a negative applied trigger output such as light sensors and some external movement detectors.

9 - Monitor (N.O, Alarm Type 14)

This is used to dial out to programmed phones whenever the zone is triggered. It can be used to monitor machinery breakdown. It activates Alarm Type 14, which must have the appropriate dialout settings. A similar N.C zone type is Zone Type 17

10 - Fire (N.O. Fire Alarm)

A normally open 24-Hr circuit which is usually connected to a smoke or heat detector. When activated it will generate a fire alarm sound from the speakers and pulse the 12v sirens for 10 minutes. A programmed response may be triggered in the zone setting or fire alarm type to switch lights on aiding an escape or to open an automatic gate to enable easier access for the fire services. Cannot be bypassed.

11 - Gas (N.C, Gas Alarm)

A 24-Hr circuit which will generate a gas alarm sound on the speakers and operate the siren for 10 minutes. A programmed response may be triggered in the zone setting or gas alarm type to switch the gas supply OFF or open doors and windows. This zone type can be bypassed by default, but bypass can be disabled by setting 24 Hour ON in Table 10

12 - Panic Audible (N.C, Panic Alarm)

(N.C, 24-Hr circuit) A 24-Hr circuit that will generate a full audible alarm condition when activated. Can be bypassed, but bypass can be disabled by setting 24 Hr ON in Table 10.

Panic Silent

(Siren Type 0 in Alarm Type 9) To select a silent Panic alarm type that will just remotely signal to the Central Monitoring Station and other phone numbers, change the siren type in alarm type 9 to 0 (no siren sound). This is found in Eng Menu 2,9,5.

13 - Tamper Armed (N.C, Tamper Alarm)

A circuit that will generate a full tamper alarm only when the system is set .

14 - Perimeter Away (N.C, Perimeter Alarm)

A circuit that can be used to dial-out silently if activated during Away Modes generating a perimeter alert 'Alarm Type 15 . A full alarm will be generated only when an alert zone, or immediate zone is activated within the next 10 minutes. A perimeter circuit response may be programmed to operate lighting sequences, camera switching, video recording or voice announcements. The circuit operating sensitivity is 500ms.

15 - Glass-break (N.C, Intruder Alarm)

A 24-Hr circuit which is connected to a glass-break detector.

16 - Perimeter Vibration (N.C, Perimeter Alert)

This circuit is the same as zone type 14 being active only while the system is set except it has an operating sensitivity of 50ms and is suitable for use with non-electronic (mechanical) inertia shock detectors. A zone response may be needed to act as an analyser.

17 - Soak Test (N.C, Alarm Type 14)

It can be used either to check detectors which cause false alarms (soak test) It can dial-out and will stamp the event log if it activates during armed conditions, similar to Zone Type 9, except it is Normally Closed

18 - Night Disabled (NC, Intruder Alarm)

A circuit that will generate a full alarm during Away Modes only. It is commonly used where access is required to areas during night time such as a bedroom or landing.

19 - 24-Hr Vibration (NC, 50 ms, Intruder Alarm)

A circuit that has an operating sensitivity of 50ms which is suitable for use with non-electronic (mechanical) inertia shock detectors and will generate a full alarm in all Modes. A zone response may be needed to act as an analyser. This circuit is active in only while the system is set .

20 - 24-Hr Tamper (N.C, Tamper Alarm)

A circuit that will generate a full tamper during all modes. System cannot be armed when this zone type is active. Can be bypassed by default, but bypass can be disabled by setting 24 Hr ON in Table 10

21 - Doorbell (N.O, Door Station)

The doorbell of an independent intercom system can be linked to the Door Station by providing a normally open contact to a zone of this type. This can activate the Door Station which is mounted next to the intercom system so that the user can talk to the visitor at the door from a mobile phone when the system is armed to Away.

22 - Water Sensor (N.O, 24hr Soak Test/Warning Alarm)

This zone type is intended for use with the WD2800 water sensor. This 24hr zone provides an audible alarm and dialout whenever a water leak is detected.

23 - Fire (N.C, Fire Alarm Type 12)

A normally closed 24-Hr circuit which is usually connected to a smoke or heat detector. When activated it will generate a fire alarm sound from the speakers and pulse the 12v sirens for 10 minutes. A programmed response may be triggered in the zone setting or fire alarm type to switch lights on aiding an escape or to open an automatic gate to enable easier access for the fire services. Cannot be bypassed.

24 - Switch (N.C. Null Alarm Type 0)

This zone type is the same as type 8 except the switch used should be normally closed type circuit such as for security lighting applications.

25 - Vibration 20 ms (N.C. Intruder AlarmType 1)

Similar to Zone Type 7, except that sensitivity is 100 ms

26 - 24 Hour Zone (N.C. Intruder Alarm Type 1)

A circuit which will cause an Intruder Alarm in all modes

27 - 24-hour (N.O. Intruder Alarm Type 1)

A circuit which will cause an Intruder Alarm in all modes

28 - Line Fault 24-hour (N.C. Line Fault)

A *normally closed* circuit that will cause a local alarm when triggered to alert the user of a line fault and will stamp the log and report phone trouble in the voice menu. It is used as in input from stand-alone communications equipment such as RedCARE or Paknet. Comfort may signal this condition using it s own Dialler provided Alarm Type 4 is programmed for dial-out and the phone line is intact. The option to prevent arming while this alarm is active is selectable only through CS-Xpress Alarm Types. *The user may Bypass this zone using the Bypass Menu allowing arming. Always name the zone as Phone Tamper along with it s zone number for identification by the user*.

29 - Instant Day /Away (N.C. Intruder Alarm)

Similar to Zone Type 22, except that it is inactive in Night Mode.

30 - Instant Night/Away (N.O. Intruder Alarm)

Similar to Zone Type 5, except that it is normally open. It is intended for PIRs in interior zones.

31 Instant Perimeter Away (N.O. Intruder Alarm Type 1)

Similar to Zone Type 14 except the circuit is normally open, a full alarm will be generated only when an alert zone, or immediate zone is activated within the next 10 minutes. A perimeter circuit response may be programmed to operate lighting sequences, camera switching, video recording or voice announcements. The circuit operating sensitivity is 500ms.

Customising Zone Behaviour with Responses

Each zone can have an response assigned to it to alter its operation or to change it s function, such as changing a zone from an immediate type to entry / exit in Night Mode or adding a chime, placing a double knock filter or soak testing it. You can use the On or Off response of any zone to perform a function, or you may need to change the zone type, the possibilities are endless. Select your required response and enter its number into the relevant zone that is to have the attribute using Eng Menu 1, (zone number#), 5 . Refer to Table 33 for Responses.

53 Entry Delay in Day Mode

Circuits with this On response will initiate the entry procedure when the system is in Day Mode and respond as normal when in Away Mode.

54 Entry Delay in Night Mode

Circuits with this On response will initiate the entry procedure when the system is in Night Mode and respond as normal when in Away Mode. It is commonly used to change a Hall movement detector s behaviour.

59 Announce Zone (Conditional on Home Control Alert Menu 6)

Circuits with this On Response will announce their zone name description from the Keypads on the system during all security modes. If this response is assigned to the Zone Off Response, the system will announce (Zone Name) OFF when the zone is deactivated. The word number for OFF (i.e. 229) should be programmed in Location 1689. Alternatively, word number 70 (Close) may be more suitable.

75 Chime, conditional (long)

Circuits with this On response will cause a long two-tone chime sound at the Keypads and speakers . This may be disabled by the user in Alert Menu 6 in Home Control. (Siren Type 15)

84 Chime, unconditional (short)

Circuits with this On response will cause a short two-tone chime sound at the Keypads and speakers . This may be disabled by the user in Alert Menu 6 in Home Control. (Siren Type 20)

85 Cancel Entry in Night Mode

Circuits with this On response will perform an immediate alarm if activated during Night Mode and respond as normal when in Away Mode.

86 Double Knock - Ext. Movement Detector

Circuits programmed with this On response will only cause an alarm condition if the circuit is activated twice within the double knock time window of 20 seconds. Refer to the full details of this response in Table 33. If another detector triggers also with this response activates after the first detector, then the alarm will be activated. If the detector requiring double knock is internal such as a PIR or active shock detector, then reduce the time window to 10 seconds in the Response. If you would rather the detector simply dials-out instead of activating the sirens, change the zone-type to produce a perimeter or alert alarm.

86 Vibration Analyser (modified)

Intended for a circuit that has an operating sensitivity of *20 ms* which is suitable for use with non-electronic *(mechanical)* inertia shock detectors. This Response 86 will require modification for use on low cost inertia detectors. The values of 5 seconds should replace the 20 and will only cause an alarm condition if the circuit is activated twice within the double knock time window of 5 seconds. Refer to the full details of this response in Table 33.

93 Intelligent Setting to Night Mode

Circuits with this On response will change the Away arming to Night Mode when the zone is entered. This Response would be applied to say a Landing PIR, and MUST be triggered as the user retires to Bed after first selecting Away Mode, opening and closing the exit door may defeat.

189 Stop Door Station Ringer

This Response stops the local phone ringer following the doorbell being pressed. It may be used in a Zone Response for the front door or a PIR en route to stop the phones from ringing while on the way to answer the door or when the door is opened. Uses action code 26.

Soak-Test - Zone Type 17

To help evaluate a detectors stability it is sometimes necessary to put it on test . This ensures that if it activates during the time it is on test it can do no harm as it will not trigger any sounders, however, it will stamp the log in the usual way and the user is informed of the circuit failure when un-setting and setting the system. You will need to change the zone type of the zone to be tested to 17 . This will be active only in Day and Away Modes. If required, you may have the zone dial-out to report to the central station or voice phones by enabling the dial-out numbers in the Soak test Alarm Type 17 menu in Engineer Menu 2.

To prevent the system from being re-armed after a Soak Test zone failure, enter a Response containing action code 20 into the Soak Test alarm type to cause an Engineer Reset lock-out.

Table 12 - Phone Settings (Engineer Menu 4,1)

Up to 8 phone numbers may be assigned for dialout during alarms. The phone numbers may be assigned as Monitoring Station (1st 2 numbers only), Voice Phone (landline or cellular phone), numeric pager or Alarm Voice Message.

Central Monitoring Station must be assigned to Phone 1. Any backup or alternative Central Station must be assigned to Phone 2. If no monitoring is required, all 8 Phone settings may be assigned to other phone types.

Each Alarm Type can be programmed to dial to any combination of the 8 telephone numbers. To do this, go to the Alarm Types menu (Engineer Menu 2).

Table 13 - Monitoring Station Settings

Phones 1 and 2 out of the 8 may be set as Phone Type 4, or Monitoring Station. Monitoring Station Code (sub-menu 1) is the Account number, which may be 3 to 4 digits.

Monitoring Station Type (sub-menu 2) means the Format. The list of formats supported is in Table 14. Use Contact ID format if possible as the Report and Restore Codes in all Alarm types are defaulted to this format. Contact ID is able to provide more information in its reporting, and being a DTMF format, is faster than traditional pulse type formats.

Phone Number (sub-menu 3) is for the phone number of the Central Monitoring Station receiver.

If Phone Type 1 or 2 is set to Monitoring Station Type in Engineer menu, the User Program Menu 4 will not be able to change it. The User Program menu is not able to set Monitoring Station phone type in Phones 1 and 2.

In Comfort, unlike most other alarm panels, the Report and Restore codes are programmed for each Alarm type, not by Zone.

Table 15 - Entry/Exit Time (Engineer Menu 4,2)

Entry Time (4,2,0)

The Entry Time is the time given for the user to disarm the system after opening the Entry Door when the system is armed (Away, Night, Day mode). If no valid sign-in is entered after the Entry Time, the system goes into Entry Warning Time, during which a local alarm sounds (only the internal speaker gives a pulsed tone).

Exit Time (4,2,1)

The Exit time is the time given for the user to leave the home during local arming to Away or Holiday Mode, provided all zones are closed. At

the expiry of Exit time, if the system is not armed. It gives an Arm Fail Alarm, which is a local warning on the speaker and siren consisting of a series of short beeps. For the Final Door Arm Option (Location 1692=0), the exit time is terminated and the system is armed when the Entry Door is closed. For Arm after Exit delay option (Location 1692=1), the system is armed after the Exit time is all protected zones are closed.

Entry Warning Time (4,2,2)

After the Entry Warning Time expires and no sign-in is given, a full Intruder alarm is generated. If the Entry Warning Time is set to 0, the system goes into a full intruder alarm when the Entry Time expires.

Night Exit Time (4,2,3)

Night Exit Time is the delay in seconds to allow the user to leave the protected area in when arming to Night Mode before the system is armed.

Table 16 - Security Options (Engineer Menu 4,3)

Force Arming Option (4,3,1)

To enable the user to force-arm the system when not all zones are closed, go to Engineer Menu 4,3,1 for Force Arm Options and press 1 for on. To disable this option, press 0 for off on the same menu.

Siren Reverse (4,3,3)

If the siren used is activated by removing power (self-actuating siren), set the Siren Reverse setting on in Engineer Menu 4,3,3 otherwise, leave as off.

Table 17 - General (Non-detector) Alarms

Zone Types trigger Alarm Types. Alarm Types are also triggered by other conditions, for example, Power Failure, Low battery, Phone Line Cut, Arm Failure, New Message and so on, which are not related to zones. This group of Alarm conditions are termed General, or Non-Detector Alarms. The Table of General (Non-detector) alarms associate Alarm Types with the Alarm Condition. For example, Low Battery condition is assigned to Alarm Type 7. When low battery is detected, Alarm Type 5 is triggered. The behaviour of the low battery alarm is determined by the settings in Alarm Type 5. As another example, Telephone Line Fault is assigned to Alarm Type 3 in Location 7. This produces a Trouble alarm and trouble beeps.

The General Alarm, Intruder is triggered by two alert zones or perimeter-alert zone sequence, and not by directly by zone activation.. It is assigned by default to Zone Type 1.

The General Alarm Zone Trouble is triggered by a zone trouble (open or short circuit wiring) when the security system is not armed (Security Off Mode). It is assigned by default to Alarm Type 5.

There is a fixed set of General Alarm Conditions which Comfort responds to, but each of these can be assigned to any of the Alarm

Types. If the Alarm Type for a General Alarm is set to 0 (Nul Alarm), there will be no alarm activated. For example, if the general Alarm Line Cut is set to Alarm Type 0 by setting Location 7 to 0, the Security off/Trouble led will not flash and there will be no trouble beeping sound from the speaker and Keypad when the phone line is cut. Comfort will still detect a line cut condition, and announce "Phone trouble" on the local phone when the handset is offhook, but will take no alarm action.

Table 18 - Alarm Types (Engineer Menu 2)

Comfort provides 32 Alarm Types, which determines the alarm behaviour of siren, speaker, strobe, Monitoring Station report codes, dialouts, and other characteristics. Alarm Types are triggered either by **Zone Types** or by **General (Non-detector) Alarm** conditions.

The Alarm Types menu allows for change in the following settings for each of the 32 Alarm Types:

Item	Value	Menu	Remarks
Dial-out	Yes/No	2,1	Determines whether a dialout is done
Dial Indexes	On/Off	2,1,1	Determines which phone numbers 1 to 8 are dialled during the dial out Each Alarm type can dial to any combination of the 8 phone numbers.
Dial Delay	Yes/No	2,1,2	If Dial Delay is on, the dialout will start only after the dial delay expires. Dial Delay time (common) is in Location 161.
Report Code	2 digits	2,1,3	For Comfort, Monitoring Station reporting is determined by Alarm Types rather than individual zones. This is a more flexible system and easier to program, especially if Contact ID is used, as default report and restore codes are already programmed. The Report and Restore codes consist of 2 digits, each 0 to 15. For 4-2 type formats i.e. with 4 digit account code and 2 digit report codes, setting the 2nd digit to 0 will cause the zone or user number to be reported in place of the 2nd digit. For example for Intruder Alarm, if the Report Code is 3,0, and Zone 2 triggers a report, the Report code sent will be 32. To disable reporting, set both 1st and 2nd digits to 15.
Restore Code	2 digits 0 to 15	2,1,4	
Monitoring Station Code (Class Code)	0 to 9	2,1,6	Class code (For Contact ID CMS format). This is defaulted to the correct standard setting. Do not change unless the Alarm Type definition is changed
Response	0-127	2,2	When an alarm is activated, a Response which performs actions like turning on lights and appliances may be activated. e.g. when a fire breaks out, the lights in the exit path can be turned on.
Voice Description	Phrase No	2,3	Alarm Phrase announced to a voice phone during dial out and in the event log. See table 20 for the list of Alarm phrases.
Strobe	Yes/No	2,4	Determines whether the strobe is turned on
Siren Type	0 to 20	2,5	Describes the speaker siren pattern (pulsed, steady, frequency) whether the 12V siren output is activated, the duration of the siren (see list of siren Types)
Siren Delay	Yes/No	2,5,1	If Siren Delay is on, the siren will go on only after the siren delay expires. . The Siren delay time in minutes is Location 51. The same Siren delay is used for all Alarm types which are set for Siren Delay.

Item	Value	Menu	Remarks
Event Log	Yes/No	2,6	Determines if this alarm type is reported in the Event Log
Trouble Arm	Yes/No	2,7	If the alarm type is Trouble state, whether the system may be armed when the alarm type is still active. Setting this to off will prevent the user from arming the system during this alarm. This applies only for Trouble Alarms and has no effect for alarms of other states.
Alarm State	0 to 3	2,8	0 = Idle 1 = Trouble - for trouble conditions 2 = Alert - for alert or perimeter states 3 = Alarm - for full alarm The alarm state defines the priority of the alarm.

Table 21 - Other Dialout Parameters

Dial Delay (seconds)

This is the common delay time in seconds which is applicable whenever Alarm Types are set for Dial delay.

Siren Delay (minutes)

This is the global delay time in minutes applicable when Alarm types are set for Siren delay. When the value is N, the actual delay time could range from N-1 minutes to N minutes. This value is only applicable where Siren Delay has been selected in the each particular Alarm Type.

Number of Redials

This sets the limit for the number of redials to each phone number if the outcome is not successful, i.e. busy, no answer, or no acknowledgment.

Redial Time (seconds)

This is the delay after an unsuccessful call before Comfort redials the same number.

Table 22 - Siren Types

Comfort has 20 Siren Types or patterns to cater for different audible indications. Each Alarm Type is assigned a Siren Type. Siren Type settings are not available directly in Engineer Menu, they can be changed using Locations, as given in the Worksheet. It is not necessary to change Siren type settings unless there is a special requirement.

Table 23 - Sound Types

Each Siren Type is assigned a Sound Type, which determines the frequency of the sound on the speaker (but not the 12V Siren), and the cadence or on-off pattern. The Sound Type of each Siren Type can be programmed in the Locations given in table 22. The list of available Sound Types is in Table 23. It is not necessary to change the default Sound Types

Table 24 - Siren Duration

The duration for each Siren Type is programmed in 2 consecutive Locations given in Table 24. The values to program in the two locations are given in table 24 for a range of durations.

Table 25 - Siren Type (Output Settings)

Each Siren Type can be programmed to output to the Siren (12V), Keypad or Door Station. It is always output to the Speaker (SPK+/-), but if the HI SPK setting is on, it will be at full volume, not adjustable by the VR3 trimmer. If HI SPK is programmed off, the VR3 trimmer controls the volume of the siren at the speaker.

Table 26 - Control Menu (Engineer Menu 3,1)

The Control menu is for programming of the Home Control menu used to activate the home automation functions.

The Control menu is in two levels. The first level (Control Key) selects the appliance to be addressed, using the keys 0 to *. Once the appliance is selected, the 2nd level (Action key) selects the action to be performed for the selected appliance, also using the keys 0 to *. Usually, 0 if programmed for OFF and 1 for ON.

Go to Control Settings (Engineer Menu 3,1). The system says

Enter Control Key

To program a Control Key, enter the key 0 to * , say 1, (without # key). The Menu says

Control Key, 1
Press 1 for Description, 2 for Action Key

Press 1 to assign words to the Control Key.

Each Control Key can be described by up to 4 words from the Wordlist (Table 40). To enter a word, enter the word number 0 to 254 and # key. The menu announces the word after each * key. If less than 4 words are used, enter 255 as a terminator. Once a terminator or 4 words have been entered, the menu will announce the words entered.

After assigning words to the Control key, press 2 for Actions. The menu says

Enter Control Action Key

Enter 0 to * to program the Action Key. Usually 1 is for ON and 0 is for OFF.

To program 1 for ON, press 1 (without #). The menu says

No Action

if the Action key has not been programmed. Enter up to 3 words from the wordlist (Table 40). If less than 3 words are entered, enter 255# as terminator. "ON" is 230#. Enter 255# for terminator. The menu announces the Actions words ("ON"), and asks for the Response

Control Response 0 **Enter Response and # key**

Enter the appropriate Response number from Table 33, which performs the desired function. If no suitable default Response is available, program an unused Response or reprogram a Response which is not required.

Repeat for other Action Keys for this Control Key

Repeat the sequence for each Control Key, depending on how many appliances are to be controlled by Comfort.

If the Control Menu is not programmed, (or more precisely, Control Key 1 is not programmed), the User Menu will not announce "4 for Home Control"

Location for Feedback Input (Table 26)

Each Control Key can be programmed to announce the status of the appliance (On or Off). This is done by assigning an input (programmed as Zone Type 8, Switch N/O) as the feedback input for the Control Key. The feedback input comes from a Feedback Relay or AC Current Sensor which senses the current flowing in the Appliance circuit. Figure 2.18 shows a typical circuit for two way control with feedback, where a two-way swatch allows manual control by the user as well as control by Comfort.

Table 26 shows which Location to enter the Zone or Input number which provides the status feedback for each Control Key. When the input number is entered into the correct Location, selecting the Control key in the Home Control menu will give the following menu (example):

(appliance name) ON (or OFF) **Press 1 for ON, 0 for OFF**

The state of the appliance selected by the Control key is announced. If the feedback input is ON (closed for Normally Open Zone Type), the word for the status announcement is taken from the Action key 0 (for Off) or 1 (for ON).

In figure 2.18, the appliance control is shown as via relay control, but control by other means (X10 or Infrared signal) is equally applicable.

Programming for the two way switching is given in the Applications Manual 4.2.

For version 4.107 and above, the control key feedback includes Output states, Analog Input values and Counter Values in addition to Input states.

Feedback Value	Announcement	Range
0	None	
1-64	Input State (On/Off)	Input 1 to 64
65-128	Analog Input Value	Input 1 to 64
129-191	Output State (On/Off)	Output 1 to 63
192-255	Counter Value	Counter 0 to 63

To announce an Input state, just enter the Input number in the feedback location for the control key.

To announce the value of an Analog Input, add 64 to the Input number to put into the feedback Location. For example, to announce the value of Input 8, enter 64+8=72 into the feedback Location. Note that only the inputs on the Main Control panel and Slave modules are valid analog inputs, but not the Local Expansion Module (LEM) Inputs. Analog Inputs range from 0 to 255 (corresponding to 5 Volts). Analog Inputs must be set to Double End of Line Resistor with the zone shunts.

To announce the state of an Output (on/off), add 128 to the Output number to put into the feedback Location. For example, to announce the state of Output 8, enter 128+8=136 into the feedback location.

To announce the value of a counter, add 192 to the counter number to put into the feedback Location. For example to announce the value in Counter 16, put 16+128=144 into the feedback Location. Counter numbers start from 0. Master 4.107 and above versions have 32 counters while Outside 4.107 and above versions have 64 counters. Versions prior to 4.107 had only 8 counters. The value of the counter announced will be in the range 0 to 255. For Outside versions with UCM, the C! Command can set the value of any counter to any number from 0 to 255 and the C? Command can get the value of any counter. The use of counters from 4.107 has been greatly enhanced. Counters can represent any numerical quantity, for example temperature which can be announced on the Control menu as a feedback value.

Table 27 - Holidays (Engineer Menu 3,2)

Comfort allows 24 Holidays to be programmed. Holidays tags are used in Time Programs and Reminder Messages.

A Holiday is recognised by the system as whenever the system is armed to Holiday Mode or from the specific dates which are pre-programmed into the Holiday Settings Menu (Eng Menu 3,2). If the Holiday flag is set within a Time Program, the programmed event will occur only on a Holiday, regardless of the days which may be set.

If Comfort is armed to Holiday Mode, the system regards the day of week as a Holiday, this means that Time Programs and Reminder Messages which are Holiday Flagged will operate as if it is a holiday.

Table 28 - Time Programs (Engineer Menu 3,3)

There are 16 Time Programs which can perform regular functions automatically at pre-programmed times.

Each Time Program consists of an activation time, which day/s of the week for the activation, and a custom Response. A Time Program can be specified to run regularly for any combination of days of the week (Monday to Sunday) or just to occur during a specified Holiday and whenever Holiday Mode is set. A Time Program is activated if the current day of week and the time matches the programmed day and time (to the minute). When this happens, the programmed Response will occur.

There are three ways in which a Time Program event can occur:

1 on specified days every week except during Holidays and Holiday Mode (ie. Heating). *Response needed to prevent occurrence during Holidays.
2 *only* on Holidays and during Holiday Mode (ie sprinklers).
3 on specified days every week of the year (ie. DST and CMS Test).

Time Programs can be used to perform the automatic Daylight Saving Time Adjustments to the clock (see Daylight Saving in Training Manual). 16 Time Programs are available which can be activated at any time of day and for any combination of days of the week and holidays. These Time Programs can be used to turn appliances and lights on or off and for arming and disarming the security system.

If a Time Program Day of week is ON for Holidays, it will be active on any of the defined Holidays. Applications for this are when things should happen at a different time from normal days, for example when a shop opens later or closes earlier.

* Some Time Programs do not need to know when it is a Holiday, i.e., they should happen regardless of whether the day is a holiday. However, for some Time Programs, it is essential that the programed actions should not occur on holidays, such as automatic unlocking of certain gates or automatic disarm for commercial premises or switching the heating. In such cases, the Time Program Response which is activated at the programmed time should check if the day is a holiday, by using Action 73,19 (Get Holiday) and 13 (Exit if ON) before performing the rest of the Actions..

Switching a device ON and then Off at a later time requires two Time Programs.

Table 29 - Holiday Program (Engineer Menu 3,4)

8 Holiday programs are available to randomly turn on and off appliances and lights during Holiday Mode. Refer to the Engineer Menu for full details of this programming.

Table 30 - Security Mode Response (Eng Menu 3,5)

When the system is armed to each of the Security Mode, Home, Away, Night, or Day, an optional Response or program can be activated. For

example, when armed to Away, all the lights and appliances may be turned off, or when disarmed, the heater can be turned on. To do this, enter a Response number for each of the Security Mode Responses in Engineer Menu 3,5. Arming to Holiday Mode activates the Away Mode Response.

Table 31 - Event Triggered Responses

The Open Door 1 Response in Location 52 allows the Menu 7 to Open Door in the Door Station menu

The Gate Response in Location 1686 allows the Menu 4 to Open Door in the Door Station menu

The Doorbell Response in Location 1691 is activated when The Door Station Doorbell is pressed (Default Response 233).

The Phone Ring Response in Location 1685 is activated when the Door Station Button is pressed.

The AC Restore Response in Location 1847 is activated when the AC is restored after a power failure.

The Start-Up Response in Location 1683 is activated whenever the system is started up from power-off state. This may be used to set Cameras to a desired normal view or to set flags etc. or relay outputs to normal.

The Arming Response in Location 1850 is activated whenever the system is arming. This may be used to reset latching shock detectors.

Table 32 - X10 Received Codes Responses

X10 Codes may be received via the X10 two-way interface. X10 commands from X10 switches or controllers may be used to trigger any Comfort Response. One Housecode may be recognised, programmed in Location 1851. The table shows the translation of house codes A to P into the code to be programmed in Location 1851. For example, if Housecode P is required, program Location 1851 with 80. For the programmed housecode, unit codes 1 to 16 ON and OFF commands as well as ALL Lights On, All Units Off may activate a Response. For example if Unit Code 5 ON and OFF is to switch Output 1 on and off respectively , program Location 1860 with Response 1 (Output 1 ON) and Location 1861 with Response 2 (Output 1 Off).

Table 33 - Responses (Engineer Menu 3,6)

There are 255 responses or programs in the system. Each of these Responses may be assigned to Time Programs, Holiday Programs, Zone ON and OFF, Alarm activation, Security Modes, Control Menu, and Keypad Function Keys. Responses perform functions like Output on/off, transmission of Infrared Codes, transmission of X10 codes, auto arm and disarm etc.. (see list of Default Responses and Actions). Most Responses are pre-programmed to default functions, but any Response may be redefined according to your requirements.

Table 34 - Other Location Changes

This table gives a list of Locations, some of which may not be mentioned in the other tables. Take note of the following Locations in particular:

- 720 = Battery Test Interval . The interval in hours between automatic Battery Tests when the Battery Test Option (Eng Menu 8,1) is ON
- 721 = Battery Test Duration. The time in minutes for each battery test when the AC is turned off, allowing the system to run on battery
- 1685 = Phone Ringer Response . Whenever the phone rings Comfort may activate a response (0 - 255) if entered in this location. i.e. Flash a light or switch off a noisy appliance such as a vacuum cleaner via X10.
- 1689 = OFF word. The word number to be announced when the Announce Zone Response (59) is assigned to a Zone OFF Response. The system announces (Zone name) OFF. A value of 255 removes the word.
- 1690 = Zone Auto-shunt count. This is the number of **successive** activation's of any zone in alarm state which will automatically shunt or disable the zone from causing any further alarms. The count is reset by arming, disarming, and activation of any other zone. If this feature is not required, set the Location to 0 or 255
- 1698 = Voice Menu Speed The Voice menu speed can be changed to suit the customer. The normal speed is 0. Numbers 1 to 6 give faster speeds with the higher numbers being faster. Numbers 250 to 255 give slower speeds with the lower numbers slower. The pitch of the voice is not altered by this command. Reset the system after changing this value

Table 35 - Location 39 and 40 Flag Settings

Location 39 has 8 flags which control certain settings. Some of these are available in the engineer or user menus.

Wait for Dial Tone is set in Location 39

Location 40 also has 8 flags which control certain settings. Some of these may be available in the Engineer menu.

The flags available in Location 40 are Ignore Line Cut (add value of 2), Disable Voice on Door Station, and LEM03 16 input 0 output (add value of 32). Refer to the descriptions of each flag in the Worksheet

Ignore Line Cut should not be used for UL installations or for a monitored system. It is only for Home Automation installations where security is not a concern.

Reset after changing any setting in Location 39 or 40

Table 37 - User Timers

8 user Timers can be used to do general timing functions (16 user times in Outside 4.97+ firmware). Action Codes 194 (Start Timer), 85 (Stop Timer), 86 (Check timer) handle timers.

Table 38 - User Authorisation Settings

Each of the 16 User Codes may be assigned authorisation for Local Disarm, Local Arm, Remote Disarm, Remote Arm, Disarm on Alarm only, Security Menu (User Menu 3) Access, Home Control Menu (User Menu 4) Access, and Program Authorisation. These User authorisations settings can also be programmed in the CS-Xpress software.

When assigning Control Station Function Keys (next section) ,each of the above access privileges may be applied to the Response on each Function key. This involves the use of action code **99** followed by the cumulative weights shown in Table 38. which set the type of authorisation level allowed to enter certain menu types or perform arm/disarm functions.

In UL and BS4737 Installations, Remote Arm & Disarm should be disabled.

Table 39 - Control Station Menu (Eng Menu 4,4)

Each of the 16 Keypad function keys (F + keys) can be assigned a Response. Each Function key is assigned to a default Response as shown in the table. Keypad Responses can be shortcuts to selected sub-menus, or control appliances or a perform a series of actions, as determined by the assigned Response.

Only the keys 0 to 9 and * can be programmed from the Control Station Menu. The Away, Night, Day, # and F keys are programmed using Locations because the voice menu system can only select 0 to 9 or *.

The 3 one-touch keys Away, Night, Day do not need the F key to activate the programmed functions, unlike the other keys.

Action Codes for Keypads

The following Action codes are specially useful for Keypad programming. Full descriptions of the actions are in the booklet Programming with Action Codes

Action 22 - Intercom Request

Activate Intercom Mode. The function Key puts the Keypad in Intercom Mode, broadcasting to all other Keypads until a key is pressed on another Keypad. The two Keypads are then in two way intercom conversation state

Action 91 - Go To Voice Menu

Usage : 91, *menu_number*

The Function Key activates the selected Voice Menu. See Programming with Action codes for the list of Menus available. This allows Function Keys to act as short cuts to the most useful menus without having to go through the main menu.

Action 93 - Baby Monitor Mode

Usage: 93, *id,* 91,25

Puts selected Keypad *id* in monitor mode, ie with its microphone on. Any other Keypad can listen to the selected Keypad, when the Function Key is pressed. 91,25 causes the system to go to the Baby Monitor mode

Action 94 - Keypad to Zone Linkage

Usage: 94, *id*

When assigned to a zone response, it links the selected Keypad to the zone. when an alarm occurs, the assigned Keypad will be selected for Voice Station (audio verification) by activation of the zone (audio verification).

Action 99 - User Authorisation Setting

Usage: 99, *auth*, 91, *menu*

This action determines which combination of user authorisation settings is allowed access to the function key if a code is required. It checks the user code authorisation settings (Table 38) against the value of *auth* to determine if the code entered is valid for the function key selected. For example, only codes with Program Authorisation may be allowed to access programming functions, e.g. Change Date/Time, Answering Machine settings etc.

Action 133 - Play Reminder Message on Keypad

When a zone is triggered, one of the 8 user-recorded reminder messages can be played on the selected Keypad. For example, someone prowling in the garden can be warned "This property is protected by Comfort, the Ultimate Security System. Please leave within 10 seconds or..."

See Programming With Action Codes for a full list of Actions.

See the Worksheet for the default Keypad Function Key Responses

Door Station Programming

Location 1674 determines how many Door Station are installed in the system. Enter valid values 0 or 1 and reset the system by pressing the Reset button on the Comfort PCB. There is no other programming required for Door Stations. When the Door Station button is pressed, the Keypad will chime in Home, Night or Day Mode. In Away mode the system will dial to the programmed number according to the settings in Alarm Type 26. A Doorbell Response may be programmed in Location 1691, which may be used for switching cameras or other supplementary actions.

Advanced Programming

This section describes advanced programming tricks and tips.

Preventing the two pulses on the siren when Away Armed

By default, the external siren output gives two pulses when the security system is armed to Away (or Vacation) to provide confirmation of the armed state. In some installations, this may be undesirable. To disable this sound, refer to Worksheet Table 25 (output settings) which show how to program siren types to be heard on the keypad, Siren (Bell) output and Door Station. Siren Type 5 is the Away Armed siren type, which is output to the Bell output. To disable this, do not add the value corresponding to the Bell (Siren) output. For example, to hear the two pulses on the keypad and Door Station only, program 64+32 = 96 at the Location given

Changing the Siren duration for any Alarm

When an alarm occurs, the siren turns on for the programmed time, depending on the alarm type. These settings can be found in Table 19 , 22 and 24. The siren type assigned to each Alarm type can be found In table 19, The Duration for each Siren Type can be found in Table 22. For example, the Intruder Alarm uses Siren Type 1, which has a default duration of 5 minutes. To change this to 10 minutes, look up Siren Type 1 in Table 22. The duration in seconds is contained in two locations . The default values are for 300 seconds. To change this to 600 seconds, or 10 minutes, refer to Table 24. For 600 seconds, the 1st location is not important, but the second location should be set to 46. The Locations menu is accessed in Engineer Menu 7,4,1

Time Correction

(from Version: 4.87, Location 1846)

Comfort s built-in real time clock is accurate to within 5 seconds a day, but temperature changes may cause further errors. For Time Program operation, it may be important to have the clock be more accurate than this. This time error can now be corrected on a daily basis. Location 1846 contains the time in seconds which Comfort will use to adjust its own clock. By default, this location is programmed to zero. To **speed up** Comfort s clock, program a value of 1 to 29 in this location. To **slow down** the clock, program a value of 30 to 59 in this location. For example, if Comfort is slow by 5 seconds every day, program 5 into Location 1846. If Comfort is fast by 5 seconds each day, put 55 into the Location. If the clock is slow by 20 seconds every day, put 40 into the location. To slow down the clock by up to 30 seconds, subtract the time in seconds from 60. The range of adjustment is from +29 seconds to -30 seconds. The time adjustment takes place at a fixed time each day, at 3 AM.

Follow this procedure to get the best results for time correction. Set the clock **exactly** according to an accurate time reference (the recorded time announcement from the telephone company is a good source). Change the time using the keypad Program Menu 2 (Change Time and Date), 2 to change Time. Enter the time in hour, then minutes. When you press # to enter the minutes value, the seconds value is set to 00. Synchronize pressing of # for the minutes value with the recorded

beep tone which is heard on the minute. Check the time again at the same time the next day or several days later. Calculate the time error for one day by dividing the total time error by the number of days since the time setting. Program a positive or negative correction into the Location as described above.

This can make Comfort accurate to within / second per day, or 15 seconds per month. However, changes in temperature from winter to summer and vice versa may cause a further error, which is not corrected by this method.

Resetting Latched Detectors After Alarm (v4.101)

From version 4.101, the S12V output will not automatically reset for 5 seconds upon disarming the system. Latched shock detectors require power to be turned off when the system is being armed, while latched smoke detectors should be turned off when the system is disarmed. If none of these are used, then S12V can be used as another unswitched 12V supply for detectors and other devices. Action 90 can be used to switch the S12 output off when required, and turn it back on a few seconds later. The following Response can be used:

Response 152: 90,0, 194,8,0,5,124,255. Turn off S12V and start Timer 3 for 5 seconds, then Response 124

Response 153: 90,1,255. Turn on S12V.

To reset S12V when the system is disarmed, assign the Response to Alarm Type 17 (Disarm). To reset S12V when arming, assign the Response in Location 1850.

Timer 8 used in this example is shared with the Vibration analyser and strobe flash. This can be done as these Responses run at different times and do not interfere with one another.

Programming Entry door to cause an instant alarm (not delay) in Night Mode

By default, opening the Entry door (Zone Type 2) in Day and Night Modes will start an Entry delay instead of an instant intruder alarm, so as to allow occupants to return home after the system is armed. This may be undesirable in certain installations. To allow an Entry Door to cause an instant alarm in Night and Day modes, use Action 5 (Cancel Entry Delay). Response 85 applied to the Entry door zone causes an intruder alarm in Night Mode. It can be modified to include Day mode if required.

Disabling a recurring zone activation (swinger shutdown)

If a zone keeps on triggering an alarm (e.g. Swinging door or defective PIR) the zone can automatically be bypassed after a programmed number of activations. The number of successive activations to cause a bypass of the zone in Location 1690. If the location is programed to 0 or 255, there is no auto-bypass. Take note that this applies to *successive* activations of the same zone. This is also known as *Swinger Shutdown.*

Programming a Bell Delay

In commercial premises, it may be required to delay the Siren for a programmed time when an alarm is triggered. To do this go to Engineer menu, 2 for Alarm Type Menu, 5 for Siren Type. Press # to leave Siren Type unchanged. The menu goes on to Siren Delay, 1 for on, 0 for off. If a Phone Line cut is detected before or during a Bell Delay, the Siren is activated immediately. Siren Delay can be turned on or off independently for each Alarm Type, but the duration of the delay is common, and is programmed in Location 51 (value in minutes). The maximum dial delay is 255 minutes.

Programming a Dial Delay

To program a delay before dialing to the programmed telephones for each Alarm Type, go to Engineer menu, 2 for Alarm type, 1 for Dial Settings, press 1 for On, and 2 for Dial delay. Press 1 for Dial delay on, 0 for off. The dial delay can be turned on or off independently for each alarm type, but the duration of the dial delay is common, and is found in Location 161 for FS17 (U1 version A4.xx) and 2146 for FS18 (U1 version M4.xx). The range of dial delay is 0 to 255 seconds.

Disabling dialouts in Night (and Day) Mode

It may not be desirable to have Comfort dial out in Night Mode, when people are at home. It will cause the owners cellular phone and/or pager to ring, which is not necessary if they are at home. If the setting in Location 40 to Repeat last zone is programmed ON, the keypad will not announce the zone while dialing out. Hence it is preferable to disable dialouts in Night mode unless someone outside the house, like a relative or a Central Monitoring Station is to be notified.

To disable dialout in Night Mode, use default Response 31 = 73, 0, 68, 2, 100, 0,255. This Response is to be assigned to the Intruder Alarm (and Panic, Tamper) Response (Eng Menu 2, Alarm#, 2). Action 100 Skips dialout to the phones specified (refer to Programming with Action Codes

To disable dialouts in Night and Day mode, the Response should be 73, 0, 67, 2, 67, 3, 193, 100, 0, 255.

If Phones 1 and 2 are assigned to Central Monitoring Station, and it is necessary to alert the CMS in Night Mode, the Response should be 73,0,68,2,100,2,255 which allows dialout to phones 1 and 2 only.

Omitting Zones (v4.96)

When a Zone is bypassed (F+1 on keypad, or User Menu 3,1), the zone is ignored by the system until it is unbypassed, or the system is disarmed (when all bypassed zones are automatically unbypassed). To permanently bypass a zone, use the Omit Action (action 108*, zone).* Omitted zones remain omitted until hey are unbypassed using action 76,*zone*. The Omit action can used for disabling a zone or group of zones in a room or department using a keyswitch independently of the

main system. The zones which are omitted can be programmed as immediate in all modes to simulate an independent partition.

Reporting Bypassed Zones

Bypassed zones may be reported to the programmed phone numbers. Alarm Type 16 is the Bypass Zone alarm. Set the dialout to ON and program the combination of dial indexes 1 to 8 to report for this event. When the system is auto-armed and Force arming is enabled, any zones auto-bypassed can be reported to the programmed CMS, telephones or pagers.

Playing a warning message on a Keypad or Door Station

When movement is detected in a zone, a warning message can be played on any Keypad or Door Station. Record the warning message as a Reminder message. The Time and days of week do not need to be set, and the Reminder does not need to be turned on. Program the Zone response of the movement detector for a Response using actions 133, reminder # (1-8), id. ID is 1 to 8 for keypads 1 to 8, or 49 to 51 for Door Stations 1 to 3. This will cause the reminder to be played on the selected keypad or door station when the zone is triggered. Response 116 by default plays Reminder 8 on keypad 1. See Application Manual section 5.6 for more details.

Programming a Vibration/Shock Analyzer

Vibration, shock or inertial sensors tend to cause false alarms when knocked accidentally. To program a z vibration sensor zone to cause an alarm only when knocked a number of times within a short time window, use Response 86 in the Zone Response. Response 86 by default causes an alarm only when the zone is activated 3 times within 30 seconds. This can be combined with a warning message on a keypad whenever the zone is knocked. See Application Manual 2.11 for full details.

Programming a zone for Entry Delay in Night Mode

Program Response 54 into the Zone Response. This causes an Entry Delay when the zone is triggered in Night Mode. For Entry Delay in Day mode, use Response 53

Daylight Saving Clock Adjustment (DST)

Comfort has the ability to advance or retard its own clock to synchronise with the majority of countries who use Daylight Saving Time. It does this using Response 90 in Time Program 16. This Response will advance and retard the clock 1 hour. Few countries use the same system of DST and so it is necessary to set the parameters to your country requirements. In the UK each of the adjustments happen on the last Sunday of the months March and October. The Time Program is set to occur every Sunday at 2.00 am. The response contains the two months that the adjustments are to take place and the second parameter sets the direction the clock adjustments should go.

The underlying rule is to advance at the beginning of the summer (March) and retard at the end (Oct).

Important. The clock change action will NOT take place If the Holiday box is checked in the Time Program which is set to do a DST Response (90) when it s time coincides with either an assigned Holiday Date or if the system is armed to Holiday Mode

SECTION 4 TESTING AND COMMISSIONING

The installation and programming should have been completed at this stage.

1 Go into the Test Menu (Engineer Menu 8 or User Menu 3,4) or Keypad F+3.

2 Activate the Security Check menu and do a walk test. Activate every detector and ensure that the zone is announced on the Keypad. Detectors will not cause alarms during this test. Press any key on the Keypad to end this test mode. There is no time-out for Security Check, so remember to turn it off using the # key. If a 24 hour zone such as a tamper was active when exiting during Security check, it will cause an alarm upon leaving Security Check.

3 Activate the Siren Test. The speaker and siren are activated for a few seconds.

4 If a Strobe Light is connected, activate the Strobe Test. Ensure that the strobe is switched on and off as directed.

5 Arm the security system to Away Mode. Check that the system arming procedure is completed once the entry door is opened and closed. Any programmed Away Mode response should be activated (eg turn off all lights A & B)

6 Open the Entry Door. The Speaker and Keypad should give a slow beeping tone, and any programmed Entry Alert Response should be activated Light A1 switches ON. Entry path zones should be announced but not cause an alarm. Sign in to disarm to Security Off - code#. Program the telephone numbers for dialout, and activate the dial test using Keypad F+3,3. The dial test is audible on the Keypad. The dialled digits, busy and ringback tones, as well as pager tones, Monitoring Station handshake and kiss-off tones are audible. Ensure that the dial outs are successful. If a cellular phone is programmed, check that it can sign in and access the system. Note that a Central Station Kiss-off or a Voice phone sign-in will stop further dialouts to the group of telephones which it is in, i.e. Phones 1,2 or 3 to 8, If the system is unable to dial out successfully, see the next section on troubleshooting.

7 Arm the system and trigger an alarm. Ensure that the siren and strobe turns on, and that the system dials to the programmed numbers. When the system dials to a Voice phone, check that the alarm voice menu is heard, and do alarm history, alarm tracking, and disarm.

8 Disconnect the Tamper input. A tamper alarm should be generated. (24 hour alarm). Reconnect the tamper input and disarm to turn off the alarm.

9 Activate the programmed home control menus to control the programmed appliances using F2 or User Menu 4.

10 Record a memo using F+4. End the recording by pressing any key. The Message LED should come on steady to show that there is a new memo message. Sign in to hear the new message. If the message is distorted, reduce the recording volume by adjusting the DSPKR trimmer. Messages recorded on the Keypad will not be as clear as recordings from the telephone, because of background noise.

11 Use the local phone to sign in by pressing * code #. Each key pressed should be followed by a short beep tone to indicate that is has been recognised The voice menu should be heard, and the DTMF keys should be able to select the various menus.

12 Program and Record the following messages using the telephone:
- Greeting Message - Prog. Menu 1,3
  (This may also be played on the doorphone, where required, involve the customer)
- Alarm Message - Prog. Menu 3,5
  (user, company name and address) Precedes all outgoing calls
- User Name - User Menu 2,6,2 (where required, involve the customer)

13 Press 5 for Voice Station to enter two-way communication with the Keypad. You should be able to hear sounds on the Keypad. When you talk, you should be heard on the Keypad. The conversation is half-duplex, i.e. only one side can talk at a time.

14 Dial into the system. Ensure that the system answers the call after the designated number of rings (5). Ensure that the system recognises the DTMF keys, sign in by pressing * code #, you should then be able to select the various menus. Each key pressed should be followed by a beep tone to show that the key has been recognised.

15 Activate the Voice Station Menu remotely by pressing 5. You should be able to hear sounds from the Keypad. Just like with the local phone, when you talk you should be heard on the Keypad. If the sound on the remote phone is cut off whenever someone talks on the Keypad, reduce the level of the microphone trimmer. Excessive levels of microphone background noise tend to fool the system into thinking that the remote end is trying to talk, and hence to switch the direction of the communications to talk .

16 If there are more than 1 Keypads, press F 8 to activate Intercom mode. All other Keypads should hear voice from the originating Keypad. Any keypress on another Keypad will shut off other Keypads and allow that Keypad to talk with the originator. Any Keypad can talk by pressing and releasing any key. Press F to end.

17 If there is a Door Station, pressing the button when Security is OFF should cause the Keypad to give a door chime tone and will ring the phone if a ringer is fitted. Use the local telephone to answer and talk with the Door Station. Check that both sides can be heard clearly. If a Response has been programmed into Location 52, press 7 to open the door or gate.

18 The Keypad can also be used to talk to the Door Station. Only 1 side can talk at a time. The Keypad controls the direction of the conversation, by pressing 1 to alternate between talk and listen modes.

19 Program Alarm Type 25 to dial to a mobile phone, Arm the system to Away Mode, and press the Doorbell. The system should call to the mobile and allow you to talk to the Door Station after selecting 1 .

Troubleshooting Kit

When installing Comfort or attending to problems on site, it is advisable to have the following tools in the tool kit:

1 Multimeter for checking continuity and resistance.
2 A hands free telephone for checking telephone voice menu operation
3 12V Test lamps for checking outputs
4 Default programmed U4 Non-volatile Memory (NVM) chips, in case certain settings have been corrupted or wrongly programmed.
5 Infrared LED with 100-ohm resistor wired up a long cable and terminated in terminal block. This can be connected directly to the output to check transmission of Infrared signals to remote-controlled appliances

Red/Green LEDs Initialisation Sequence Wrong

When power is first applied or the Reset button is pressed, the system goes through a self-test sequence. Observe the red and green leds on the Comfort panel (not the Keypads). The correct sequence should be:

1 Both Leds turn on
2 The Red LED goes off after 1 second, with the green LED remaining on
3 The Green LED turns off after 5 seconds and immediately comes on again
4 The Keypads announce Security Off

If the above sequence does not happen, check the following:

The Red and Green Leds do not come on after Power Up

There may be a problem with the U1 Chip. Replacing U1 may fix the problem

The Green LED remains on after 5 seconds, i.e. does not blink

The Voice System may be faulty or the Voice Chip U7 may not be programmed correctly. Using a Voice Programmer Board to program U7 may fix the problem

The Red and Green LEDS both come on after 5 seconds:

The U4 Non-volatile memory (NVM) is the wrong version or may not be the right format. Changing the U4 to a default-programmed U4 of the correct version will clear the problem. Downloading default settings or a valid file from CS-Xpress and pressing the RESET button may also fix the problem.

Keypad/ Door Station Problems

"Communications Failure"

Home LED blinks and Communication Failure, *ID* followed by the ID number is reported upon user sign-in. This means that a Keypad or Door Station or SEP02 is not communicating with the Comfort panel. The ID address of the unit which is not communicating is reported. This ID identifies which unit is giving the problem, according to the table below:

Keypad	**ID**	**Door Station**	**ID**
1	65	1	49
2	66	2	50
3	67	**SEP02**	
4	68	1	33
5	69	2	34
6	70	3	35
7	71		

1 Check the wiring to the unit concerned.

2 If Communications Failure happens each time on Security Off, the power may have been connected to S12V. Keypad power should be connected to 12V terminals.

Keypad Beeps continuously

If a Keypad is beeping continuously, it means that it has not received any RS485 communications on the KA/KB lines for the last 6 seconds. The beeps will continue until any key is pressed or if communication resumes. The beeping does not occur if the unit can receive communications but is not addressed by the Control panel, due to settings in Locations 1674 and 1675.

1 Check that the KA/KB are connected to KA/KB on the Comfort panel, double-check they are the right way round.

2 If **all** Keypads and Door Stations beep continuously, it means that the problem could lie on the Comfort panel or could mean that all of the KA-KB comms connection are crossed. Check there is voltage 13.8V on the 12V terminal.

Cannot Sign In on Keypad

If the Keypad is not beeping continuously as described above, it probably means that communications can be received but the ID is not set up or voice is not connected.

1 Check that all other Keypads are not in use, for example in Security Check which does not time out. Press F on the active Keypad to exit.

2 Check that the Keypad/Door Station ID (SW1) and Keypad/ Door Station selection (JP5) is correctly set for each Keypad and Door Station.

3 Next check that Location 1675 is set to the number of Keypads and Location 1674 to the number of Door Stations. The Comfort system must be reset after changing Locations 1674 and 1675

4 Check that the MIC and Voice are connected to JP15 on the Control Panel. If voice is not heard, the problem is in the Audio path.

5 Check that the Keypad Volume Control knob on the Keypad and the trimmer in the Door Station is not all the way down.

None of the Indicator LEDs on the Keypad are on

At least one LED should always be on steady or blinking.

1 Check that the 12V and Ground are connected to the corresponding terminals on the Comfort panel, and the wires are not reversed.

2 Use a multimeter to check that 12V is actually coming to the Keypad

Playback of Recording is Distorted

Usually, this is because the Microphone trimmer is set to too high a gain. Reduce the gain by tuning the MIC trimmer VR1 lower (clockwise) on the Control panel.

Cannot Hear Two-way Audio for Voice Station or Door Station

If the remote phone is unable to hear the Keypad or Door Station whenever there is a sound on the monitored area, there may be wrong settings in some of the Tuning Parameter Locations. The following apply to Rev C boards with version 4 firmware. The 1st two columns show Tune Parameter values in the CS-Xpress Tuning Parameter screens to check, while the 2nd two columns show the Locations and values to check. Check either the CS-Xpress or Locations values.

Tune Parameter	Value	Location	Value
32	2,047	112	255
		113	7
33	2,730	114	170
		115	10
34	16,000	116	128
		117	62
35	281	118	25
		119	1
36	16,000	120	128
		121	62
37	-16,000	122	128
		123	93
38	16,000	124	128
		125	62
39	-16,000	126	128
		127	93

Phone Problems

Cannot Sign in on Local Phone

When * is pressed on the local phone **within 5 seconds** (see 5 for adjustment of this time) of lifting the handset, there should be a relay click on the panel. Subsequent keys should have beep tones as acknowledgment that the system has detected the key presses.

1 If no relay click is heard, it could mean that the Keypad is being used. Press F on the Keypads to end the Keypad operation and try again

2 Use a telephone which you know does work. The customers telephone may not be compliant with telecom requirements even though it may seem to work. If the relay clicks when the * key is pressed, but the phone goes dead, check that the TEL IN and OUT connections have not been interchanged.

3 Replace the U4 on the system with one which has been programmed with default settings. If Locations relating to DTMF detection have been changed inadvertently, it may cause this problem. If the default U4 works, reprogram the U4 according to the customers settings using the Keypad or CS-Xpress.

4 We have found that in rare occasions, certain telephones may not be able to sign in locally, because they require a higher voltage to operate than other phones. These are normally not type-approved models. In such cases, another model of telephone on the premises may be able to work.

5 **Phones which don t work well with Comfort:**
Some of the following phones are known to have problems with accessing Comfort due to their delayed output of the *star key tone:
Phillips Xalio DECT, BT Response 100, 200, 300, BT DECTFax, BT Diverse 300 Answering Machine/Phone, BT Diverse 350 Caller display, BT Siemens Diverse 2010. (DECT). There is now a new location which allows you to set the listening window time in seconds which Comfort can accept a star key. This is set in location 1849 (Def: 5 seconds) and should only be adjusted only if it is is neccessary with some DECT phones, otherwise accessing BT Star services could be made difficult.

"Phone Trouble"

If the voice says "Phone Trouble" when the handset is lifted, it means that the phone line is cut or not working or a phone is being used on the incoming line to Comfort. Check the incoming telephone line connection. Comfort detects low voltage on the telephone line and supplies its own power to the local telephone so that it can still be used to operate the system. The speaker produces a beeping sound for 10 seconds to indicate the trouble condition after the line has been down for approx 60 seconds, and the green led on the PCB and keypads flash. The condition is cleared when the line is restored and the user signs in with their code to acknowledge. The time which Comfort allows a Line Cut to be present is now adjustable up to 255 seconds using Location 1684. This can be used when it is suspected that the Telephone company provide an intermittent service. The speaker

volume for the trouble beep can be adjusted using the trimmer next to the speaker terminals. During an alarm, the speaker volume is at the maximum and not affected by the trimmer adjustment. (See section on Parallel Phones below)

Parallel Phones

There should be no telephones or faxes connected in parallel to the incoming line to the panel, otherwise when the parallel line is used, Comfort will detect a Phone Trouble. Also the system may no be able to seize the line to dial out in the event of an alarm. There can be parallel phones connected to the TEL OUT connector. If due to existing wiring constraints, it is not possible to avoid telephones connected in parallel to TEL IN, it is possible to set Ignore Line Cut setting in Location 40 and Location 7 (See Table 35 and 17).

Setting Ignore Line Cut results in a loss of security as the System is unable to dial out if the parallel phone is off-hook. This cannot be used for UL systems or monitored systems., and is meant for systems concerned mainly with Home Automation only

Customer has their own Answering Machine

If the user prefers to use their own answering machine, set the number of rings much higher than their answering machine in each mode (Home, Away, Night, Holiday). This is done in User program menu 1,1. However, if this is done, the user cannot have unprovoked remote access to the system because once the external answering machine takes over, Comfort is not able to take the call.

Customer's Caller ID Does not work

Comfort has been tested to be compatible with Caller ID adjuncts and telephone sets. However, it is not possible to test with every Caller ID models available. The caller ID set may be connected either at the TEL IN or TEL OUT input. If there are problems,

1 Check that the caller ID is type-approved for the country of use

2 We have found that actual telephone cable should be used to connect the caller ID set to the telephone line. Cables used for security wiring may not be suitable.

Special Telecom Services (e.g. Call Forwarding and Voice Mail)

Call Forwarding and Answering services on the subscribers line may give a broken dial tone when in operation. Comfort waits for up to 9 seconds for a continuous dial tone before dialling out. If the broken dial tone does not restore to a continuous tone after a few seconds, disable the detection of Dial Tone in Location 39 (See Table 35) by subtracting 128 from the value at that location. Push the reset button on the Comfort panel. Comfort will dial after 5 seconds in the absence of dial tone.

Cannot dial out successfully

1 Check that the relevant Alarm Types have the Dial Settings on (Eng Menu 2,1) and the dial settings are enabled for the phones which are to be dialled (1 to 8)

2 Does the telephone line have Call forwarding or Voice Answering (provided by the phone company)? This may prevent a dialout because Comfort may not detect a dial tone. See "Special Telecom Services

3 Do a Dial Test (User menu 3,4,3 or Engineer menu 8,3). This dials to all programmed telephones from 1 to 8. The dialling tones, busy tones, ringback tones, as well as handshake and kiss-off tones from the Monitoring Station receiver are audible on the Keypad. This is very useful in troubleshooting dialling problems. If the system cannot detect dial tone, it will say Please hang up in case an incoming call is holding the line, and wait for the caller to hang up. If dialling to the CMS or pager or voice phone, the system cannot detect the handshake or pager tones or voice answer, you can hear this.

4 Check the settings for Pulse Dial (Eng Menu 7,1). If the telephone line is tone dialling, the Pulse dial setting should be OFF,. Check the PABX Setting (Eng Menu 7,2). If the panel is not on a PABX extension, the PABX setting should be OFF, otherwise the system will dial a 0 or 9 to try to get an outside line

5 If the dialout is still unsuccessful, check the following. If any of the locations are changed, RESET the system.

Parameter	Should be	Menu	Remarks
PABX Setting	Off	Engineer 7,2	If not connected to PABX extension
Location 260	11	Engineer 7,4,1	Pager Start key (*)
Location 261	12	Engineer 7,4,1	Pager key displayed as '-' (#)
Location 262	11	Engineer 7,4,1	Pager 1st end key (*)
Location 263	11	Engineer 7,4,1	Pager 2nd end key (*)
Location 48	65 - 70	Engineer 7,4,1	Pager Frequency Upper
Location 49	40 - 55	Engineer 7,4,1	Pager Frequency Lower
Location 80	9	Engineer 7,4,1	DTMF Tone level
Location 81	0	Engineer 7,4,1	DTMF Tone level (continued)
Location 86	80	Engineer 7,4,1	Defaults
Location 87	0	Engineer 7,4,1	Defaults
Location 88	40	Engineer 7,4,1	Defaults
Location 89	0	Engineer 7,4,1	Defaults

Tracing False Alarms

Use Event Log

The last 250 events can be heard by going to the Event log (User menu 3,3) or Engineer menu (8,3). You can navigate through the log by

pressing 1 for next event, 2 for previous event, 0 for 1st event, 9 for last event, 3 for Next Day, 4 for Previous Day. See Engineer Menu 5,1 for a full description of the events which are recorded.

False Alarm on Disarming

This may be caused by connecting PIRs or Keypads to the S12V output instead of the 12V terminals. S12V and 12V share the same terminal block. S12V is meant for detectors which need to be reset on disarming, and is switched off for 5 seconds when the system is disarmed. PIRs programmed as 24 hour zones which have their supply connected to S12V will activate when disarmed. Also Keypads which are powered from S12V will report Communication Failure .

There is now an Arming response (Location 1850) which allows shock detectors to be reset during the exiting procedure instead of at the point that the system is disarmed (which resets the detector before the culprit has been identified). You can feed such detectors via a relay which is normally closed and pulse the output feeding the relay using a pulsed output responses (eg. 130,20,8 = pulse OP8 for 1 second),via the Arming Response Location 1850.

Zone Troubles

Go into Security Check (Eng Menu 8,2) or Function 3,2 on Keypad. The names of the zones activated are announced. If 2 End-of-line resistors are used on zones, open-circuit and short-circuit wiring are announced as Zone (N) Trouble instead of by their zone names. If zones are open or normally open on entering Security check, they are announced once upon entry into the Walktest Menu at the beginning, to hear their status again, press #2 and re-enter the menu.

How to recover lost User Codes

If users other that User 1 (Master code) forget their codes, the User program Menu can delete them and Add the code again (in Program menu 5,2). If the Master Code (for User 1) is lost, the Engineer can get into program Menu by Pressing F+0, then Engineer menu, and then 9 for Program menu. Then press 5 for User Codes and 2 to erase User 1 and add the user again.

Is the Siren Duration restarted during Alarm by new zone activations?

The siren duration starts when a zone is triggered to cause an alarm. If another zone is triggered while the siren is still on, the siren continues but the timer is not restarted if the same siren type is activated. The siren will time out according to the programmed duration after the original activation. However, if a different siren type is activated, e.g. a Fire Alarm Siren after an Intruder alarm siren, then the new siren duration will take effect.

Does the system remain armed after removal of power?

After a complete loss of power, including battery discharge, the system remembers its last state and restores it. If the system was armed to Away, Night or Day mode, it will re-arm to that mode when powered up again. The Date and Time will be reset to default after a complete power loss, and will need to be reprogrammed.

Can Announcements be disabled on certain keypads?

Yes, go to the keypad for which announcements are to be disabled, and go to Program Menu 3,1. Press 1 to enable announcements, 0 to disabled them **on that keypad alone**. This is also described in the User Manual.

Can Comfort be Partitioned?

Comfort does not have any partitioning feature, where the system can be subdivided into two or more independent partitions, able to be armed and disarmed independently. However, it is possible to use the OMIT action (from v4.96) to bypass a group of zones (programmed as immediate in all modes) usually using a keyswitch or a stand-alone access control keypad to achieve a similar function. Refer to the Application Manual for the programming and setup.

Engineer Menu
Press 1 for Zone
2 for Alarm
3 for Control
4 for Security
5 for Event Log
6 to Change Sign-in code
7 for System
8 for Test
9 for Program Menu
(Entering Eng Code will perform Engineer Reset - UK Only)
Press # to End

Zone(1)

Enter Zone Number and # key

Each zone can be programmed for Description (words), Zone Type, Entry Path, Zone On Response, Zone Off Response. System says the current settings for the zone selected. Valid Zone numbers are 1 to 16

When the zone number and # key are entered, the following menu is played e.g.

Zone 2, Bedroom window
Zone Type 2, Entry Path Off,
Zone Response 0, OFF Response 0
Press 1 for Description,
2 for Zone Type,
3 for Entry Path
5 for Zone Response
6 for Off Response

In programming the above settings and all settings in general, the currently programmed setting is announced. The new setting can be entered followed by the # key. If a Yes or No response is required, press 1 for ON and 0 for OFF - # is NOT required. If the current setting is not to be changed just press #.

Zone Description (1,1)

(zone description) -
Enter Word number and # key

Press 1 for Description : The currently programmed description is announced, followed by "enter new number and # key". Enter each word followed by the # key. Refer to the Word List (Program Table 1) for assigned word numbers. A maximum of 4 numbers may be programmed. If there are less than 4 numbers, enter 255 # to terminate. The description is used in zone announcements event log, alarm history, alarm tracking.

If no words are assigned to a zone, the default description for reporting and announcements will be the zone number.

Zone Type (1,2)

The voice menu says the current zone type and asks for a new number and # key. Up to 32 zone types can be entered. (See Table 2 - Zone Types) e.g.

Zone Type 2, Enter new number and # key

The currently programmed zone type (0 to 31) is announced followed by "enter new number and # key". Assign each zone in the premises to one of 32 Zone Types 0 to 31 (See Program Table 2 - Zone Types for a description of the predefined zone types). The Zone Type defines the key characteristics of the zone and simplifies programming. The door(s) to be used for entry and exit should be designated as Entry Door Type (Zone Type 2). If a zone is not used, program it as Zone Type 0, which means it will be ignored.

Entry Path (1,3)

Entry Path ON
Press 1 for ON, 0 for OFF

The voice menu says current entry/ path setting (on or off) and asks for a new setting 1 for on, 0 for off. If the zone is on the entry path, the zone can be activated during entry without causing an alarm, **provided the Entry Door is opened first.**

Zone On Response (1,5)

Voice Menu says the current ON response (0 to 99) and asks for a new response number and # key. The ON response is executed whenever this zone is activated. A response can perform home automation actions, or arm and disarm the security system etc.. Enter 0 if no ON response is required. e.g.

Zone Response 3,
Enter new number and # key

Enter the new response and #, or just # to leave the response unchanged. Refer to the Default Responses List..

Zone ON definition depends on the Normally Open/Normally Closed setting of the Zone Type, i.e. Closed contact for N.O zones and open contacts for N.C zones.

The Zone Response is activated even if the zone is Inactive (e.g. in Security Off), and before any Alarm Response triggered by the zone.

Zone Off Response (1,6)

System says the current OFF response when this zone is deactivated and asks for a new response number and # key. The OFF response is executed whenever this zone is deactivated. A response can perform home automation actions, or arm and disarm the security system etc... Enter 0 if no OFF response is required. e.g.

OFF Response 16,
Enter new number and # key

Enter new response and #, or # to leave the response unchanged. Refer to the Default Responses list

Zone OFF definition depends on the Normally Open/Normally Closed setting of the Zone Type, i.e. Closed contact for N.C zones and open contacts for N.O zones.

The Zone Off Response is activated even if the zone is Inactive, e.g. in Security Off Mode

Alarm (2)

Enter Alarm Type and # key (0-31)

Up to 32 Alarm Types can be selected. (See Alarm Types in Table 4). This menu allows the Dial settings, Alarm Response, Siren Types, Communicator Report Codes and other settings for the selected Alarm type to be changed.

(Alarm Name)
Press 1 for Dial Settings
2 for Response
3 for Description
4 for Strobe
5 for Siren Type
7 for Trouble Arm Option
8 for Alarm State

Dial Settings (2,1)

Dial Settings On (Off)
Press 1 for on, 0 for off.

For each alarm type, the dial out setting can be enabled or disabled. If the dial setting is on, i.e. 1, the system will dialout to the assigned numbers in the event of this alarm occurring. If the dial setting is 0 (off), no dialout will be made.

When the dial setting is set to ON, the following sub-menu is heard

Press 1 for Dial Settings
2 for Dial Delay
3 for Alarm Report Code
4 for Alarm Restore Code
6 for Monitoring Station Code

Dial Settings (2,1,1)

Up to 8 numbers can be dialled in the event of alarm activation. Any combination of the 8 phone numbers can be selected for dial out for each Alarm Type. If the dial setting is ON, the voice menu will say the Phone Indexes (1 to 8) of each phone index selected. For example, "Dial Setting 1,3,6,7" means dial out will be made to the numbers programmed in Phone Indexes 1,3,6,7 whenever this Alarm Type is activated.

Enter Dial setting 1 to 8

Enter 1 to 8 to select a Phone Index. The current setting (1 or 0) may be changed by pressing 1 for ON or 0 for OFF to turn on or off the setting for the phone index. If the setting for the phone index in ON, activation of the selected alarm type will trigger a dialout to the phone index.

This menu assigns dial settings to the Alarm Type. The assignment of phone types and numbers to the dial settings is done in Change Phone Numbers menu (Engineer menu 4,1).

Dial Delay (2,1,2)

Dial Delay OFF
Press 1 for ON, 0 for OFF

If dial delay is on for an Alarm Type, the system will start to dial out only after the dial delay time. The Dial Delay setting is seconds (0 to 255) in the Dial Delay Location 161. The value entered for Dial delay has a variance of -1 second, i.e. a value entered of 10 seconds means an actual delay of 9 to 10 seconds. If the Dial Delay is off for an Alarm Type, the system will dial out immediately when the alarm is activated. The Dial Delay time is common to all Alarm types that have Dial Delay enabled. If the system is already dialing out due to another activation, Dial delay will not be applied for the new activation.

For UL installations, Dial Delay should be left off.

Alarm Report Code (2,1,3)

Alarm Report Code (digit 1), (digit 2),
Enter new number and # key

This is the 2 digit Report Code which is sent to the Central Monitoring Station when this alarm type is activated. Report Codes for Contact ID are preprogrammed. If it is required to change the default report codes, enter the first digit of the new report code followed by # or just # to leave the first digit unchanged. The range allowed is 0 to 15. Numbers 10 to 15 represent a hexadecimal code of A to F respectively. When the first digit is entered, the voice menu says the value entered, and the value of the 2nd report code digit e.g.

Report Code 2,.. zero
Enter new number and # key

Enter the 2nd digit of the report code and #, also in the range 0 to 15. If only 1 digit is required by the Communicator format, the second digit is ignored by the system, and is not sent. If the second digit of the report code digit is set to 0, Comfort will automatically put in the zone

number or the user number, depending on the alarm type, as the second digit. For DTMF Communicator formats e.g. Surgard and Contact ID, refer to the Communicator formats table in Worksheet Table 14

If this alarm is not to be reported, enter 15 in both digits, i.e. 15#,15#, corresponding to FF.

Alarm Restore Code (2,1,4)

Alarm Restore Code (digit 1), (digit 2),
Enter new number and # key

This is the 1 or 2 digit Report Code which is sent to the Central Monitoring Station when this alarm type is restored. If it is required to change the default restore codes, enter the new restore code here or # to leave the value unchanged. The first number to be entered is the first digit of the restore code. The range allowed is 0 to 15. Numbers 10 to 15 represent a hexadecimal code of A to F respectively. When the first digit is entered, the voice menu says the value entered, and the value of the 2nd restore code digit e.g.

Restore Code 2,.. zero
Enter new Number and # key

Enter the 2nd digit of the restore code if required, also in the range 0 to 15. If only 1 digit is required by the Communicator format, the second digit is ignored by the system, and is not sent. Setting the second restore code digit to 0 will cause the Comfort system, to put in the zone number or the user number, depending on the alarm type, as the second digit. For DTMF Communicator formats e.g. Surgard and Contact ID, refer to the section on Communicator formats in Worksheet Table 14.

Not all alarm types will send the restore code when restored. For example, Intruder alarm (alarm type 1) will not send a restore code, as the alarm is restored by disarming.

Zone -triggered alarms may be set to report restores by entering a restore code. Trouble conditions like Low Battery, power failure, Zone Trouble, may also send restore codes.

If the alarm restore is not to be reported, enter 15 in both digits, i.e. 15#,15# corresponding to FF.

Monitoring Station Code (2,1,6)

Code 1, Enter New Number and # key

This refers to the Contact ID Class Code, which is a single digit number from 0 to 9. This is sent with the Contact ID report to Central Monitoring Station. It is ignored for other Central Station formats.

Alarm Response (2,2)

Response (0 to 99), Enter Response number and # key

An Alarm Response or program may be performed when the alarm is activated. For example, a response may be assigned to Entry Alert (alarm type 10) to turn on a light when the entry door is opened in Away Mode. Enter 0# if no response is to be performed.

Description (2,3)

Intruder Alarm, Enter New number and # key

Each Alarm type has an Alarm Phrase which is reported to Voice Phone and Alarm Voice Message Phone Types. The sentence number 0 to 254 is programmed here. refer to the Worksheet for a list of applicable sentences.

Strobe (2,4)

Strobe ON,
Press 1 for ON, 0 for OFF

If the strobe is to be activated during this alarm, press 1 for ON, else press 0 for OFF.

Siren Type (2,5)

Siren Type (0 to 20), Enter new number and # key

Each alarm type is associated with a Siren Type. Each siren type has characteristics which determine whether the siren is activated and the cadence (continuous or pulsed), the sound pattern on the speaker and the duration of the siren activation. Refer to the table of Siren Types.

For UL installations, Siren Type 2 (Temporal 3) must be used for Fire Alarm (Alarm Type 12). This is the default setting.

Siren Delay Off
Press 1 for ON, 0 for OFF

A Siren Delay may be selected for Each Alarm Type.

If Siren Delay is on for an Alarm Type, the Siren will be activated only after the Siren Delay. The Siren Delay setting in minutes (0 to 255) is in the Siren Delay location 51. The value entered for Siren delay has an variance of -1 minute, i.e. entering a value of 2 minutes means the siren delay is actually 1 to 2 minutes. If the Siren Delay is OFF for an Alarm Type, the siren will be activated immediately without any delay. The Siren Delay time is common to all Alarm Types which have Siren delay enabled.

For UL installations, Siren Delay should be left off.

Trouble Arm (2,7)

Trouble Arm OFF,
Press 1 for ON, 0 for OFF

This setting determines if the user is allowed to arm the security system when this alarm type is active. This only applies to alarm types which have Trouble state, e.g. Zone trouble, Phone Trouble, Power Failure, Low Battery, Home Tamper etc.. Selecting 1 (for ON) allows the system to be armed when this alarm type is active, and selecting 0 will prevent arming. If the Alarm Type is not a Trouble Alarm, this setting is ignored

Alarm State (2,8)

Alarm State, 1
Enter new number & # key

This setting assigns an alarm state to the alarm. The Alarm states are Idle (0) , for non-alarm conditions like New Message, Arm, Disarm, Dial Test etc, Trouble (1) for all system trouble conditions, Alert (2) for Alerts triggered by Alert and Perimeter zones and Entry Alert, Alarm (3) for full alarm conditions.

Control (3)

Press 1 for Control Menu
2 for Holiday
3 for Time Program
4 for Vacation Program
5 for Security Mode Response
6 for Response

Control Menu (3,1)

The Home Control Menu is a 2 level menu. The first level consists of Control Keys 0 to 9 and *. This is for selecting the appliance to control, or the group of appliances, for example, Press 1 for Lights . In this example 1 is the Control Key, which is pressed to select Lights.

The second level or Actions Keys selects the action to be performed once the Control Key is selected, for example Press 0 for OFF, 1 for ON, 2 for Low, 3 for High .

The Control Menu is as follows:

> **Enter Control Key**

Enter control key 0 to 9. This selects the digit on the telephone keypad for Home control. These control settings program the assignment of digits on the telephone keypad with the descriptions e.g. Digit 1 for "Living Room Lights", the control action description (e.g. "on", "off") and the Control response required to perform the action.

When the action code is selected, the system says the Description for the selected digit, e.g.

> **Living Room Lights ,**
> **Press 1 for Description,**
> **2 for Action Key**

Description (3,1,1)

e.g.

> **Living Room Lights - enter word number and # key**

Enter word number from the Word List (Table 1.). A maximum of 4 words is allowed. If less than 4 words are required, end with 255 # or 0#

Control Action Key (3,1,2)

The Action Key refers to the assignment of digits on the telephone keypad to a word description of the action e.g. 1 for "on" and 0 for "off" and the Response required to perform the action.

> **Select Control Action Key - press 0 to 9**

Select which key to assign to the action for the appliance.

Control Action Words (3,1,2,1)

Up to 3 Action words can be entered to describe the actions to take place by selecting this Action key

When digit 0 to 9 is pressed, the voice menu says e.g.

> **On**
> **Enter Word number and # key**

Enter the new word number and # key. Enter the next word in the same way. A Maximum of 3 words is allowed. If there are less than 3 words, enter 255 as the terminator.

Control Action Response (3,1,2,2)

Response 12 - enter Response number and # key

Enter new response number 1 to 99#, or just # to leave response unchanged. Enter 0 if no response is required.

From the Engineer menu, press 3 - Control Settings, 1 - Output Settings. The Voice menu says:

Enter Control Key

Control Keys are the numbers on the phone keypad which select the appliance or group of appliances, for example

Press 1 for Light, 2 for Heater..

1 and 2 etc.. are the Control Keys.

Example

Determine which control keys on the phone keypad from 0 to 9 and * are to be assigned to home appliances or lights. The phone keys are programmed in 2 levels. The first level assigns the appliances to each key, the 2nd level for each appliance or light assigns actions to each key (e.g. off, on, open, close). Select the Control Key for the appliance to be controlled. Then select the Output Description and enter up to 4 words for the device (light or appliance). Determine the Actions which are to be performed for this device and for each action, assign up to 3 words (e.g. ON, OFF, HIGH LEVEL, LOW LEVEL etc..) and assign a Response number which is to perform the required Action. Repeat for each action key,. Do the same for each Control Key to be programmed..

As an example, we shall program the following Home Control Menu:

Press 1 for Bedroom Light
2 for Garage Gate

with bedroom light connected to X10 house code A, unit code 1, and Gate control connected to output 1 and 2, where a pulse on Output 1 opens the gate and a pulse on Output 2 closes the gate.

In the Control Menu, press 1 for Control Key 1. The Voice Menu says

Press 1 for Description,
2 for Action Key

Press 1 for Description. Up to 4 words can be entered from the wordlist (Table 1), as in the Zone Descriptions. The currently programmed words are announced, followed by

Enter Word Number and # key

Enter each word (0 to 254) followed by the # key. If there are less than 4 words, enter 255# as the terminator. The voice menu repeats the words entered. In the example enter words 6# (bedroom), 34# (light) , 255# (terminator).

Press 2 for Action Key after the Description has been entered. Action Key refers to the keys 0 to 9 and * which determine what action is to be taken when the key is pressed. In this example, 1 is assigned to ON and 0 to OFF. The voice menu says

Select Control Action Key. Press 0 to 9

Press 1. The Voice Menu says

No Action

as the Action Key has not been programmed.

Enter up to 3 word numbers from the wordlist (table 1) followed by the # key in the usual way. If less than 3 words are entered, enter 255# as a terminator. In the example, enter 230# for the word "ON". Enter 255# as the next word (terminator). The voice menu announces the words entered , i.e. "ON" in this case. Next the system asks for the Response, i.e.

Control Response 0, Enter Response Number and # Key

The Control Response is performed when the action key is pressed. This Response does the actual work for the menu. For this example, turn on X10 code A1, enter Response 33#.

There are a maximum of 11 actions keys 0 to * to be programmed in this way. Program Action Key 0 for OFF (word number 229) and Control Response 34.

Repeat for Control Key 2 - "Garage Gate". The table below gives the settings for the example

Key	Description				Action Key	Action Words				Resp	Notes
					0 to 9	Description	0-255	0-255	0-255	0-127	
1	Word 1	Word 2	Word 3	Word 4	0	OFF	229	255		34	Turn off X10 A1
	0-255	0-255	0-255	0-255	1	ON	230	255		33	Turn on X10 A1
	6	33	255		2	-	255			0	Not Used
	Bedroom Lights				3	-	255			0	Not Used
					4	-	255			0	Not Used
					5	-	255			0	Not Used
					6	-	255			0	Not Used
					7	-	255			0	Not Used
					8	-	255			0	Not Used
					9	-	255			0	Not Used
					*	-	255			0	Not Used
2	Word 1	Word 2	Word 3	Word 4	0	Close	70	255		79	1 sec Pulse Output 1
	0-255	0-255	0-255	0-255	1	Open	231	255		80	1 sec Pulse Output 2
	23	26	255		2	-	255			0	Not Used
	Garage Gate				3	-	255			0	Not Used
					4	-	255			0	Not Used
					5	-	255			0	Not Used
					6	-	255			0	Not Used
					7	-	255			0	Not Used
					8	-	255			0	Not Used
					9	-	255			0	Not Used
					*		255			0	Not Used

Holiday Settings (3,2)

Enter Holiday Number and # key

Up to 24 Holidays may be specified. For each holiday, the month and day are programmed. These holidays are used in Time Programs and Reminder Messages, where the Time program or Reminder Message can be programmed to be activated for any combination of days of week and public holidays.

When the Holiday number (1 to 24) is entered, the voice menu says e.g.

January 1
Change Month, January, enter new number and # key

Enter the new month (1 to 12) and # key, or just # to leave the month unchanged. The voice menu will say the new month e.g.

> **March**
> **Change Day, 1, enter new number and # key**

Enter the new day (1 to 31) and # key, or just # to leave the day unchanged. The system will not allow the entry of an invalid day e.g. April 31 or Feb. 29 for non-leap years.

Holidays are used in Time Programs and Reminder Messages as part of the Day-of-Week settings.

Note: This menu is also available in the User Program Menu under Change Date and Time (2 - Change Date and Time, 3 - Change Holiday)

Time Program (3,3)

> **Enter Time Program Number and # key**

Enter Time program number 1 to 16.

When a valid Time program is selected, the voice menu says (e.g.)

> **Monday, Tuesday, Wednesday, Thursday, Friday, Holiday**
> **11:45 PM, Response 3**
> **Press 1 for Day of Week**
> **2 to change time**
> **3 for Response**

Day of Week (3,3,1)

> **Select Day of week**
> **Press 1 for Monday**
> **2 for Tuesday**
> **..**
> **8 for Holiday**

Press 1 to 8 to select a day of week. Number 8 selects a Holiday, which takes precedence over other days of the week, i.e. if a day is a Holiday and a Monday, the Holiday setting will be in effect.

If 1 for Monday is pressed, the voice menu says (e.g.)

> **Monday, ON**
> **Press 1 for on, 0 for off**

Press 1 to select the day of week to be on, and 0 to select the day to be off. This determines whether the selected Time Program will be activated on that day of week.

The same procedure is repeated for each day of week

Use of Holiday in Time Programs

If a Time Program Day of week is ON for Holidays, it will be active on any of the defined Holidays. The application for this is when things should happen at a different time from normal days, for example when a shop opens later or closes earlier.

Some Time Programs do not need to know about Holidays, i.e., they should happen or not regardless of whether the day is a holiday. However, for some Time Programs, it is essential that the programmed actions should not occur on holidays, such as automatic unlocking of certain gates or automatic disarm for commercial premises. In such cases, the Time Program Response which is activated at the programmed time should check that the day is not a holiday, by using Action 73,19 (Get Holiday) and 13 (Exit if ON) before the rest of the Actions.

Change Time (3,3,2)

Change hours, 12, enter new number and # key

Enter new activation time (0 to 24) in 24 hour format and #, or just # to leave the value unchanged. For example, for 2 PM, enter 14#.

14
Change Minutes, 0, enter new number and # key

Enter new activation minutes and # key, or just # to leave the value unchanged. The time just entered is the activation time for the Time program, when the Time Program Response will be activated.

Response (3,3,3)

e.g.

Response 1, enter Response number and # key

Enter the new response number 0-99 and # key, or just # to leave the value unchanged. A value of 0 means that no response will be executed.

Holiday Program (3,4)

8 Holiday Programs are available to randomly switch lights and other appliances on and off in Vacation mode to give the appearance that the premises are occupied.

Enter Vacation program number and # key

Enter the vacation program number (1 to 8) and # key The voice menu says the current settings of the selected Holiday program (e.g.)

6:00 am, 2 hours, ON response 3, OFF response 17
Press 1 for Start Time,
2 for Hours,
3 for ON Response,
4 for OFF Response

Holiday Program - Start Time (3,4,1)

e.g.

6:00 am, enter new number and # key

Enter new Time (hours only) in 24 hours format, e.g. 12 for 12 PM, or # to leave the time unchanged. This start time is randomised, i.e. the actual start time has 0 to 59 minutes added to it, e.g. if 3:00 PM is programmed, the ON response may be activated at any time from 3 PM to 3:59 PM

Holiday Program - Hours (3,4,2)

This parameter is the duration of the vacation program in hours.

e.g.

2 hours, enter new number and # key

Enter new duration in hours and #, or just # to leave the value unchanged. The actual duration of the vacation program will be randomized. e.g. if 2 is entered, the actual duration will be between 2 hours and 2 hours 59 minutes.

Holiday Program - ON Response (3,4,3)

e.g.

ON response 23, enter Response number and # key

Enter new ON response number and #, or just # to leave the value unchanged. Enter 0# if no response is required. This response is executed when the activation time is reached.

Holiday Program - OFF Response (3,4,4)

e.g.

Off Response 23, enter new number and # key

Enter new OFF response number and #, or just # to leave the value unchanged. Enter 0# if no response is required This response is executed after the duration specified above has expired.

Security Mode Response (3,5)

A response may be specified to execute when changing to one of the Security Modes (home, away, night, vacation). For example, when arming to Away mode, all lights and appliances may be programmed to turn off.

Press 0 for Security off
1 for Away Mode
2 for Night Mode
3 for Day Mode

Press 0 to 3 to select the appropriate mode. The voice menu will say the current response number. e.g.

Response 34, enter Response number and # key

If no response is required, enter 0#. To leave the value unchanged, enter just #.

Response (3,6)

Enter Response Number and # key

This menu allows you to change the Actions associated with any Response number. There are 99 Responses in the Comfort System. Most of these are assigned to default Actions, but may be changed according to your requirements. Refer to the Worksheet for the list of default Responses and Programming with Action Codes booklet for the list of Action Codes. Responses can be used to perform tasks when triggered by Zone activation, Time Programs, Vacation Programs, Alarm Types or Home Control. Each Response consists a series of Actions. An Action performs a single task, e.g. switching an output on or off, sending an X10 code, or an infrared remote control code, arming or disarming the system. An Action consists of 1 to 4 bytes. The 1st byte is the Action number, and subsequent bytes are the parameters for the Action.

Enter the Response number (1 to 99) and #.

The voice menu says the values of the bytes making up the Response, e.g. for Response 1, which switches on output 1:

128, 1, 1, 0, 0, 0
Enter new action and # key

The 1st number 128, is the Action number, which controls an Output. The 2nd number refers to the output number 1, and the 3rd number ,1 is to turn on the output selected, whereas 0 will turn it off.

Enter the new values, 1 number at a time followed by #. Enter 255# to terminate the Response. The voice menu will say the action code numbers which are entered up to code 255 which terminates the Response and is not spoken. Press just # to leave the menu without changing the action codes. If you entered some action codes before pressing # by itself without the 255 terminator, the codes you entered will be part of the response, but the remaining codes in the Response will not be changed (assuming this Response was already programmed with action codes).

Each Response Number takes up 6 action codes or bytes. However, you may enter more than 6 action codes for a Response. This takes the allocated memory from the next Response, which means the next Response may not be used. For example, if you enter the following action codes for Response 80: 195,65,01,05 (X10 Code A1 ON), 128,02,01 (Output 2 on), 255, this takes up 8 bytes. Response 80 will turn on the X10 device with address A1 and Output 2. Response 81 cannot be used as its memory slot has been used by Response 80. More than 1 Response may be affected depending on the number of action codes used for a response. If 24 action codes are used, the next 3 Responses cannot be used

Security (4)

Press 1 for Phone Settings
2 for Entry/exit Time
3 for Security Options
4 for Control Station

Phone Settings (4,1)

Select Phone

Press 1 to 8 (without # key) to select the phone index.

Phone settings 1 and 2 may be assigned to Monitoring Stations, or to other phone types. Phone settings 3 to 8 may be assigned to Voice Phone, pager or Alarm Voice Message.

The primary or main Monitoring Station is assigned to Phone Setting 1, and the second or backup Monitoring Station is assigned to Phone Setting 2. The system will only dial to the second Monitoring Station if it fails to get connected to or receive a kiss-off from the first Monitoring Station.

The voice menu says the current setting of the selected phone index, e.g.

Pager 92117893
Press 0 for No Phone
1 for Voice Phone
2 for Pager
3 for Alarm Message
4 for Monitoring Station

Voice Phone refers to any telephone or cellular phone, where a voice message will be played, and the user can sign in to access the system.

The Pager Phone Type displays the 4 digit Pager ID code, the alarm type and zone or user number on the pager. See the Quick Reference Guide for a list of pager codes for each Alarm type

The Alarm Message Phone Type gives a prerecorded message as well as announcing the Alarm Type, and does not permit sign-in to access the system.

Set the unused dial settings to phone type 0.

If 1 (voice phone) or 2 (pager) is selected, the voice menu says

Voice Phone (or pager)
Enter new number and # key

Enter the new number and #, or just # to leave the number unchanged.

If you make a mistake while entering the phone number, press * or the AWAY key on the keypad to clear and start again.

To enter the * or # keys in a telephone number (which may be needed for calling card access or phone unlocking), press the DAY key on the keypad followed by the desired key.

For example, 1234 <DAY> # 5678 enters 1234#5678, whereas if <DAY> was not used, the # would terminate the key entry. (Applicable to firmware version 4.45 and above)

To enter a pause or delay within a phone number, press the NIGHT key on the keypad followed the pause in seconds. For example, 1234 <NIGHT> 35678 will insert a pause of 3 seconds during dialling between the numbers 1234 and 5678. (Applicable to firmware version 4.45 and above)

Phone settings 1 and 2 only may be programmed to dial to Central Monitoring Stations. Other phone types may also be assigned to the first two phone settings if not used for Monitoring Stations. When this is selected the Voice menu says:

Press 1 for Monitoring Station Code
2 for Monitoring Station Type
3 to Change Phone Number
4 for Voice Station Option

Monitoring Station Code (4,1,4,1)

The voice menu will say the current Account Number for the customer e.g.

1234
Enter new number and # key

Enter the new 3 or 4 digit account number and #, or just # to leave the number unchanged.

Monitoring Station Type (4,1,4,2)

This menu sets the Communication Format. The voice menu will say the current type (i.e., the Communication format) e.g.

13
Enter new number and # key

Enter the new communication format 1 to 16, (see Communicator Formats - Table 10, Programming Tables) for the communication format numbers) or just # to leave the current format unchanged.

Monitoring Station - Change Phone Number (4,1,4,3)

The voice menu will say the current Monitoring Station phone number e.g.,

> **8725742**
> **Enter new number and # key**

Enter the new phone number for the Monitoring Station and #, or just # to leave the number unchanged.

Monitoring Station Voice Station Option (4,1,4,4)

This option determines whether the 2 way voice feature is enabled after a report to the Central Monitoring Station.

> **Monitoring Station Voice Station OFF,**
> **Press 1 for ON, 0 for OFF**

Enter 1 to enable and 0 to disable, or # to leave the setting unchanged.

When this setting is selected, the CMS operator is able to pick up the phone after the digital communicator transmission has ended and to activate the Voice station in 2 way mode.

Dialout Grouping: The 8 phone numbers are divided into 2 dial out groups. These are phones 1 and 2 in the first (monitoring station group) and phones 3 to 8 (normal phones group). In the normal phones group, a valid sign-in from a Voice Station will stop further dial outs in that group. In the Monitoring Stations group, a kissoff from a Monitoring Station or a valid sign-in from a Voice Phone will stop further dial outs in the group. Acknowledged dial outs to pagers and Alarm Voice Message Phone types do not stop dial outs to other phones, but end dial outs only to that particular number. The sequence of dial outs is from phone 1 to 8. If a dial out is not acknowledged or if the called number is busy or does not answer, the system dials to the next number in the list, and returns to the failed number in the next cycle.

There is a programmable delay of default 3 minutes after a kissoff from a Monitoring Station in an alarm state before the other phone numbers are dialled, to allow time for the Central Station to call the premises to verify the alarm. This delay in minutes is in Location 1687.

Once phone 1 or 2 is set to a Monitoring Station, the user will not be able to change the phone setting to other phone types or make any other changes to the programmed phone in the Program Menu.

If your system is connected to a PABX extension (not permitted for UL installations), do not include the PABX access digit as part of the phone number. You should use the PABX settings instead (7,2,1). Always connect the system to the default extension, which will have access to an outside line when there is a power failure. The system will not dial a PABX outside line digit if there is a power failure.

The system should not be programmed to dial to the police station unless the number has been specifically assigned by the police station to provide such a service.

Entry/Exit Time (4,2)

Press 0 for Entry Time, **1 for Exit time,** **2 for Entry Warning Time** **3 for Night Exit Time**

Entry Time (4,2,0)

20 seconds, enter new number and # key

Enter new entry time in seconds and #, or just # to leave the value unchanged.

The **Entry time** is the time allowed after entering the designated Entry Door when the system is armed to allow the user to sign-in. If the entry time expires without a valid sign-in, a local Warning Alarm (Alarm Type 6) will be generated for the duration of the Entry Warning Time This produces a warning alarm on the Speaker only. If the Entry Warning Time is set to zero, the Entry Warning Alarm is bypassed, and the system will go into a full Intruder Alarm when the Entry Time expires.

For BS4737 installations, the combined Entry Time plus Entry Warning Time should not exceed 45 seconds.

Exit Time (4,2,1)

20 seconds, enter new number and # key

Enter new exit time in seconds and #, or just # to leave the value unchanged.

The **Exit time** is the time in seconds allowed after arming the system locally for the user to exit through the designated Entry Door when the system says "Please Exit" after passing the Security Check. If the Exit Time expires without closing of the Entry Door, the system will not be armed, it will remain in Security Off Mode. An Arm Failure Alarm (Alarm Type 4) is generated. As with all alarm types, this may be programmed to dialout and activate a response if needed. The default Arm Failure alarm generates a series of beeps on the speaker and does not do a dial out. If during arming the Security Check finds some

protected zones not closed, and these open conditions are not cleared, there is a time-out of 5 minutes to clear these zones after which the Arm Failure alarm is generated.

For remote arming, it is not necessary to leave by the front door in order to arm. The system will arm after a short delay if all zones are closed.
For BS4737 installations, the Exit time may not exceed 120 seconds.

Entry Warning Time (4,2,2)

20 seconds, enter new number and # key

Enter new entry warning time and #, or just # to leave the value unchanged.

The **Entry Warning Time** is the time in seconds after the Entry Time has expired to allow for a valid sign-in before an Intruder Alarm is generated. This feature reduces the incidence of false alarms generated by users while disarming. If the Entry Warning Time is set to 0, an Intruder Alarm will be generated immediately upon expiry of the Entry Time, without any Entry Warning.

For BS4737 installations, the combined Entry Time plus Entry Warning Time should not exceed 45 seconds.

Night Exit Time (4,2,3)

5 seconds, Enter new number and # key

The **Night Exit Time** is the time in seconds allowed for people to leave the protected zones during Night Arming. During this delay time, the system produces a slow beeping tone on the speaker. If zones are open, a faster beeping tone is heard, as well as the names of the open zones on the Voice Station or the telephone.

Enter new entry time in seconds and #, or just # to leave the value unchanged.

Minimum value for Night Exit Time is 4 seconds.

Unlike arming to Away or Vacation mode, the user is not required to leave the home

Security Options (4,3)

Press 1 for Force Arm Setting 3 for Siren Reverse

Force Arm Setting (4,3,1)

Force Arm Option ON
Press 1 for ON, 0 for OFF

Set the option to ON (1) to allow force-arming by the user (default ON). The user force-arms the system by pressing # during Security Check. The zone which is auto-bypassed in this manner reverts to protected status if it is subsequently closed. If the Force Arm setting is OFF, pressing the # key during Security Check causes the arming to be cancelled.

If an Auto-arm response is activated and Force arming is enabled, the system will force arm and automatically bypass any open zones.

Siren Reverse (4,3,3)

Siren Reverse Option OFF
Press 1 for ON, 0 for OFF

Press 1 for ON and 0 for OFF. If the setting is OFF (0), which is the default, the Siren Output is turned on (i.e. 12 V applied between SRN- and 12VF) to turn on the siren. If ON, the voltage to the siren is applied when there is no alarm and cut off for alarm. This is used to drive self-actuated sirens with a built-in backup battery. Default is OFF.

Normally, 12V is applied to the Siren Terminals (JP9) to activate it. For Self-actuating sirens which sound when voltage is removed and are silenced when voltage is applied, the Siren Reverse Option must be set to ON

Control Station (4,4)

This menu is for programming the Keypad Function keys

Enter Control Key

Enter Key 0 to 9 or *

Response 0,
Enter Response number and # key

Enter the new response (0 to 127) to be assigned to the Function Key. When the Function key is activated, F + Control key, the programmed Response will be triggered. The Response can give a shortcut to a commonly-used sub-menu. See Programming with Action Codes (Action 91) for a list of sub-menus. Any Response can be assigned to Keypad function keys. This means that the Keypad can be used to perform any function in the system!

Code OFF,
Press 1 for ON, 0 for OFF

Each Function key can be programmed to require a user sign in code or not. If a sign-in code is required, the when the Function key is activated, the user will be asked to sign in. If the code is valid, then the programmed Response is activated. The user authorisation settings are in effect here, for arming, security menu, and Home Control.

Event Log (5,1)

The Event Log will be announced over the phone in the format (Date), (Time), (event). If any key other than 1,2,9,0 is pressed, the voice menu will say:

Press 1 for next , 2 for previous 0 for 1st, 9 for last, 3 for Next day, 4 for Previous day # to end

Pressing 1, 2, 9, 0, 3 or 4 during the event log announcement will immediately interrupt the announcement and go to the specified event. In this way, you can go quickly to the event of interest.

Voice Event	Restoral	Description
Alarm Erased	N/A	Alarm activation aborted within the 'Abort Time'.
Alarm Voice Message OK	N/A	Dial-out acknowledged by recipient pressing # key.
Arm Failure	N/A	System failed to arm, returned to Security Off Mode.
Away Mode	N/A	System armed to Away Mode - Full Set
Battery Warning	Restore	The battery was tested with AC 'OFF' and found to be less than 10.5V.
Zone 'Name' Bypassed	Zone No. Bypass Off	A zone was bypassed either by a user or automatically using a response.
Change Time	N/A	Date or Time Changed using user or program code.
33 Communications Failure	33 Restore	Remote Expansion Module 1-3 Data Failure. Prefix denotes identity. Address 33=SEP 1, 34= SEP 2, 35= SEP 3
49 Communications Failure	49 Restore	Door Station 1-4 Data Failure. Prefix denotes ID. 49=Door Station 1, 50=Door Station 2, 51=Door Station 3
65 Communications Failure	65 Restore	Keypad 1-8 data failure. Prefix denotes ID 65=Keypad 1, 66=Keypad 2, 67=Keypad 3, 68=Keypad 4
Day Mode	N/A	The system is armed to Day Mode
33,49,65 Tamper Alarm	Restore	SEP, Door Station or Keypad tamper activation, 33-35=SEP 1-3, 49-51=Door Station 1-3 and 65-68=Keypads/Intercoms1-4.
Dial Failure	N/A	Dial-out failed (Busy, no answer, no acknowledgment, no sign-in)
Dial Test	N/A	System dial-test selected.
Doorbell	N/A	Doorbell pressed while system is armed
Duress Alarm	N/A	Duress Code entered by user adding or subtracting '2' from their code, it will be preceded by: (time) mailbox no ? sign-in code OK.

Voice Event	Restoral	Description
Engineer Menu Phone Call Sign-In	N/A	System dialled engineer via a response linked to a function key
Entry Alarm	N/A	A valid user code was not entered within the entry timer duration.
Engineer Reset (UK Only)	N/A	The Engineer has reset the system following Alarm Activation, using *.
Engineer Menu	N/A	The Engineer has entered the system using the Eng Access code.
Force Arm	N/A	During Exit, the hash key was pressed to force arm the system.
Fire Alarm Zone 1-24	Restore	Fire Alarm Activation followed by Zone number.
Key Arm	N/A	System armed using a response linked to a zone-switch or function key
Intruder Alarm Zone 1-24	N/A	Intruder Alarm Activation followed by Zone number.
Mailbox No. Sign-In Code OK	N/A	Valid user code 1-16 entered using local phone or Keypad.
Mailbox No. Phone Call Sign-In Code	N/A	Valid user code 1-16 entered remotely using external phone.
Monitoring Station	N/A	
Night Mode	N/A	System Armed to Night Mode - Part Set.
Panic Alarm Zone 1-24	Restore	Panic Alarm Activation followed by Zone number.
Pager Dial OK	N/A	Successful dial-out to pager with correct acknowledgement
Perimeter Alarm Zone 1-24	N/A	Perimeter Alarm Activation followed by Zone number.
Phone Trouble	Restore	Telephone line cut or phone in parallel and 'off hook' on Comfort Tel In.
Phone Number 1-8	N/A	System attempted to dial telephone number 1-8.
Power Failure	Restore	Mains Power Removed
Security Off	N/A	The system is disarmed and unset.
System Armed	N/A	System Armed to one of the three modes.
Siren Tamper	Restore	Monitored Siren output (SRN-,SRN+) has a broken wire or ground fault.
System Reset	N/A	System reset using Reset Button, Engineer Menu or CS-Xpress.
Sign-In Tamper	Restore	More than six unsuccessful attempts to sign-in at the Keypad while the system is armed.
Tamper Alarm 1 or Tamper Alarm 49+/65+	Restore	Panel (J4), Bell tamper -Tamper Alarm 1, Keypad - Tamper Alarm 65 to 72 , Door Stations - Tamper Alarm 49 to 51.
Holiday Mode	N/A	System is armed to Holiday Mode
Warning Alarm	Restore	Warning Alarm Activation followed by Zone number. e.g. Water Leakage
Voice Reset	N/A	A problem occurred with the Voice Engine, which was reset to clear the problem.
Zone Alert 1-24	N/A	Zone with alert zone type activated
Zone Trouble	Restore	Zone tampered with followed by Zone number .

Printing the Event Log

CS-Xpress can be used to upload the panel log via a local connection using the RS232 interface module. This can then be printed from the PC running the CS-Xpress software.

Erase Event Log (5,0)

If this option is selected, the event log will be erased. This is only available on the Engineer Menu. The user menu allows the Event Log to be heard, but not erased

Change Sign-in Code (6)

Enter new code and # key

The system will not allow a sign-in code which is the same as another existing sign-in code or a sign-in code +/1 which is a duress code, in which case the voice menu will say

Invalid

A 4-digit to 6-digit number may be entered. When the new number is entered, the system will ask for confirmation

To confirm, enter new code and # key

If the number corresponds with the 1st number entered, the voice menu will say

Sign-in code OK

If the 2nd code entered is not the same as the 1st number entered, the 1st number will be discarded, and the 2nd number will be saved for comparison, and the system will ask to confirm the sign-in code again.

Sign-in codes ending with 0000 and 9999 are not allowed.

System (7)

Press 1 for Pulse Dial Option
2 for PABX option
4 for Star Menu

Pulse Dial Option (7,1)

Pulse Dial Option OFF
Press 1 for ON, 0 for OFF

If this option is set to ON, the system will use pulse dialing to dial out. However, a tone dialing phone is necessary to activate the voice menus.

PABX option (7,2)

PABX Option OFF,
Press 1 for ON, 0 for OFF

If the system is to be connected behind a PABX, i.e. it is connected as one of the extensions of an analog PABX, set this option to 1.

Warning: If the Comfort system is connected as one of the extensions of a PABX, it will not be able to detect a telephone line cut condition on the incoming telephone line, and may not be able to seize the telephone line to dial out in case of an alarm if all the outside lines are used by other extensions.

Do not connect the system to an extension of a PABX for UL installations.

PABX Key (7,2,1)

PABX Key, 9, Enter PABX key

Enter the number (0-9, *) you use to access an outside line on your PABX. This is usually 9 or 0 in most systems.

Comfort handles the dialout through the PABX intelligently. If there is a power failure, Comfort will not dial the PABX access key to get an outside line. If the Comfort system is connected to an extension of a PABX, the extension should be one which has direct access to the telephone line in the event of a power failure. The PABX should be on the same power circuit as the Comfort system.

Star Menu (7,4)

Press 1 for Location Menu **2 for System Reset** **3 for System Control Number**

This menu is for special configurations which are not available in the other menus.

Locations (7,4,1)

Enter Location and # key

Enter the Location which has up to 4 digits and the # key. The Locations Menu is used to program settings which are not available on the Engineer Menu. The Worksheet will give information on the Locations which may be changed and values to use.

For Example, Location 1692 sets the Away Arming Method. Enter 1692#

Location 1692 **Code 0** **Enter New Number and # Key**

Value 0 in Location 1692 means Final Door Arming, i.e. system is armed after the Final Door is closed. To change to Arming after Delay, enter 1#

System Reset (7,4,2)

This causes the system to be reset. The programmed parameters and recorded messages are not erased by system reset. Reset the system after changing zone sensitivities using Locations, or using CS-XPress to download zone settings.

System Control Number (7,4,3)

This menu gives the current software version e.g.

Airconditioner 4, 20

The first word denotes a particular configuration for different countries or applications. The numbers following denote the version, in this example 4.20

Test (8)

This menu is also available in the User Menu (*3, Security Menu.. 4, Test)*

Press 1 for Battery Check
2 for Security Check
3 for Dial Test
4 for Siren
5 for Strobe
6 for Engineer Test Mode

Battery Check (8,1)

Immediately activates a battery test by switching off the AC supply, and letting the backup battery supply power to the system for 2 minutes (default). If at any time during this test, a low battery condition is detected, the ac power will be turned on and a battery test fail report will be sent to the Monitoring Station (if a monitoring station is programmed), or to any designated phone number in the Low Battery Alarm Type.

The duration of the battery test in minutes (where the AC is off) is in Location 721. Valid values are 0 to 254, default is 2 minutes. If the duration is set to 0, the AC is off indefinitely until a low battery is detected.

A battery test is performed at regular intervals according to the setting in Location 720. The setting is in hours with a valid range from 0 to 254 hours. A value of 0 or 255 disables the automatic test. The automatic battery test is always done on the hour, except for the first one initiated by the Battery check menu.

An automatic Battery test at least once every 4 hours is mandatory for UL installations.

Security Check (8,2)

The system does a Security Check similar to the one which is activated when the system is armed, except that any activated detector is announced once, until # is pressed to end this test mode. Any activated detector, even 24 hour zones will not activate an alarm during the duration of this test. This allows a walk test to be done on the premises.

When the Security Check is started, all zones which are already ON will be announced first. If a zone is in trouble condition, i.e. open or short circuit with double EOL resistors, the Zone Number will be announced, e.g. Zone 4 Trouble .

While in Security Check, if a zone does not announce when activated, exit from Security Check by pressing #, and then restart Security Check to hear if the zone is announced. if it is, that means the zone is always open.

Dial Test (8,3)

When this menu is selected, the Voice Menu says..

> **Dial Test, Please hang up**

After you hang up the phone, Comfort will immediately dial out to all the programmed phones, pagers and monitoring stations. It will not seize the telephone line immediately as this is an Idle state alarm. On pagers, the Dial Test alarm type is displayed. On voice phones, "Dial Test" is announced when the phone is answered. For Monitoring Station receivers, the Test report code is sent.

For Phone 1 and 2, any Voice Phone Sign-in or CMS kiss-off will stop the dial test to this group. For Phones 3 to 8, any Voice Phone sign-in will stop the dial test to this group of phone numbers.

Siren Test (8,4)

Selecting this option activates a short Siren test.

Strobe Test (8,5)

> **Strobe Test,**
> **Press 1 for ON, 0 for OFF**

Press 1 to activate the strobe light, and 0 to switch it off after the test.

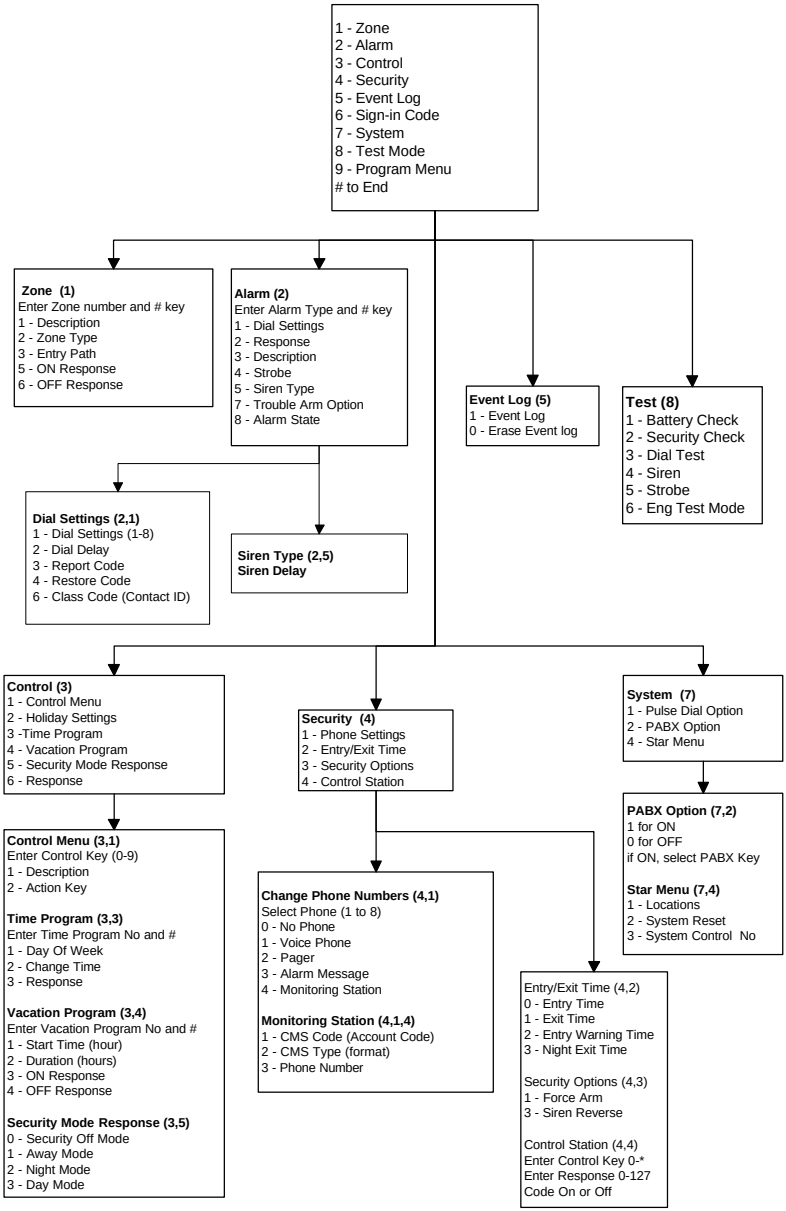
Engineer Test Mode (8,6) - *use for keypad and doorphone tampers*

> **Engineer Test Mode Option OFF**
> **Press 1 for ON, 0 for OFF**

In Engineer Test Mode, no alarm or trouble signals or dial outs will be generated. This mode allows the Engineer to work on the system freely. The Telephone Line Cut detection is still active in this mode. When the system is armed, the Engineer Test Mode is automatically turned off, in case the Engineer has forgotten to turn it off. It is particularly useful when opening or restoring the tamper link (remove JP7) within the doorphones and keypads.

When the Engineer Test Mode is switched off, the system automatically goes into Security Check mode to prevent alarms caused by zone faults, any faults are reported to allow you to rectify them.

Engineer Menu Flowchart



Technical Support

Comfort and associated products are supported in the UK by ISCaM Systems Ltd. The technical helpline (see below) is available Monday to Friday for Comfort Approved Installers from 10.00 AM to 4.00 PM. Complex enquiries should be faxed through on the following number +44 1244 671455. For help on analysis regarding problems with a system configuration, it is advisable to copy the .csx file in question onto a 3.5 floppy disk and send it to the address overleaf with some brief detail of the symptom or email it as an attachment to csxfile@comfort.org.uk, again with some brief details.

UK Technical Support:

+44 (0)906 - 3004444 *(calls charged at 50p/min, does NOT work with Mobile phones or from international locations)*

INTERNATIONAL egroup Technical Support:

www.comfort.org.uk/index8.html

(if you have a technical question, then why not post it on our Comfort-technical egroup or Comfort Web Interface egroup. You will receive a prompt response)

BABT Approvals (United Kingdom)

1 This equipment is approved on a direct exchange line for Tone (DTMF) dialling

2 Although this equipment can use either loop disconnect or DTMF signalling, only the performance of the DTMF signalling is subject to regulatory requirements for correct operation. It is therefore strongly recommended that the equipment is set to use DTMF signalling for access to public or private emergency services. DTMF signalling also provides faster call setup.

3 The Ringer Equivalence Number (or REN) value allows you to establish how many telephones or pieces of equipment, such as this equipment, you can connect to your line. To find out the REN value of the apparatus on your line, add up the REN values of each item of apparatus connected. Any B.T instrument is assumed to have an REN of 1, unless otherwise stated. If you connect apparatus such that the total REN value is more than 4, one or more pieces of equipment may not ring and/or answer calls correctly. The REN of this equipment is 4.0. It is not intended for connection in parallel with other terminal equipment.

4 The equipment has been approved for use of the following facilities:

- Auto Answering
- Recording and Answering
- Auto Dialling

It may help callers if your outgoing answering machine message includes your full telephone number.

This product must be installed in accordance with the installation instructions contained in this manual.

IMPORTANT: In April 2000 the Telecoms Industry was de-regulated so after that date Telecoms testing is not a mandatory requirement. This affects BABT Telecoms TBR21 and also the European Directive CTR21.

CE Marking (Europe)

This equipment complies with the requirements of the EMC Directive (89/336/EC) and the Low Voltage Directive (73/23/EC) provided that all equipment used also carries the CE Mark and the installation follows the instructions given in this manual.

Safety Status of Connecting Ports

The following circuits are present within the equipment with the safety status specified in the table below:

Connector	**Safety Status**
Incoming and Outgoing telephone lines (MJ1, MJ2)	TNV
Box headers connected to Expansion Modules (J7,J5)	SELV
Terminal Blocks to Outputs, Zones, Bell, Strobe, speaker	SELV
Battery Connector connected to standby battery (BATT)	SELV
Terminal Block to Transformer Secondary	SELV
Terminal Block with 12V supply for external circuitry	SELV
Terminal Block for X10 TW7223 (MJ3)	SELV